WHOLESALER'S SALESMAN

CONTENTS — MAY, 1943

Times and Trends	O. Fred. Rost	13
Transportation	An Editorial by James H. McGraw, Jr.	21
Business Index—Sales and Inventories		35
—Regional Analysis		38
NEWA War Conference Program		43
The Wholesaler's Orders on Copper Wire and Cable	H. O. King	44
Mr. Wholesaler—A Message from WPB	N. G. Symonds	46
WPB's Electrical Supplies Advisory Committee		48
The How—When—Where and Why of Modern Selling Through Wholesalers	Maxton R. Davies	50
Today Wholesalers Are Indispensable—Tomorrow Looms Their Greatest Opportunity	Max McGraw	54
Post-War Construction Will Boost Sales	J. H. Aveling	58
Future Sales Prospects in Radio	Ralph R. Beal	61
Television	Robert E. Shelby	65
Sound Systems Will Sell	F. D. Wilson	68
Electronics—Promise of Tomorrow	W. C. White	72
Property Protection—A Mass Market	Paul M. Farmer	80
Production Controls Needed in Every Industry		84
Fox-Hole Tales from the Wholesalers' Battlefront	Henry W. Young	89
Recent WPB Orders and Revisions—A Digest		95
Annual Anniversaries Review		109
Wholesaler's Salesman News		31 and 127
New Products to Sell		123

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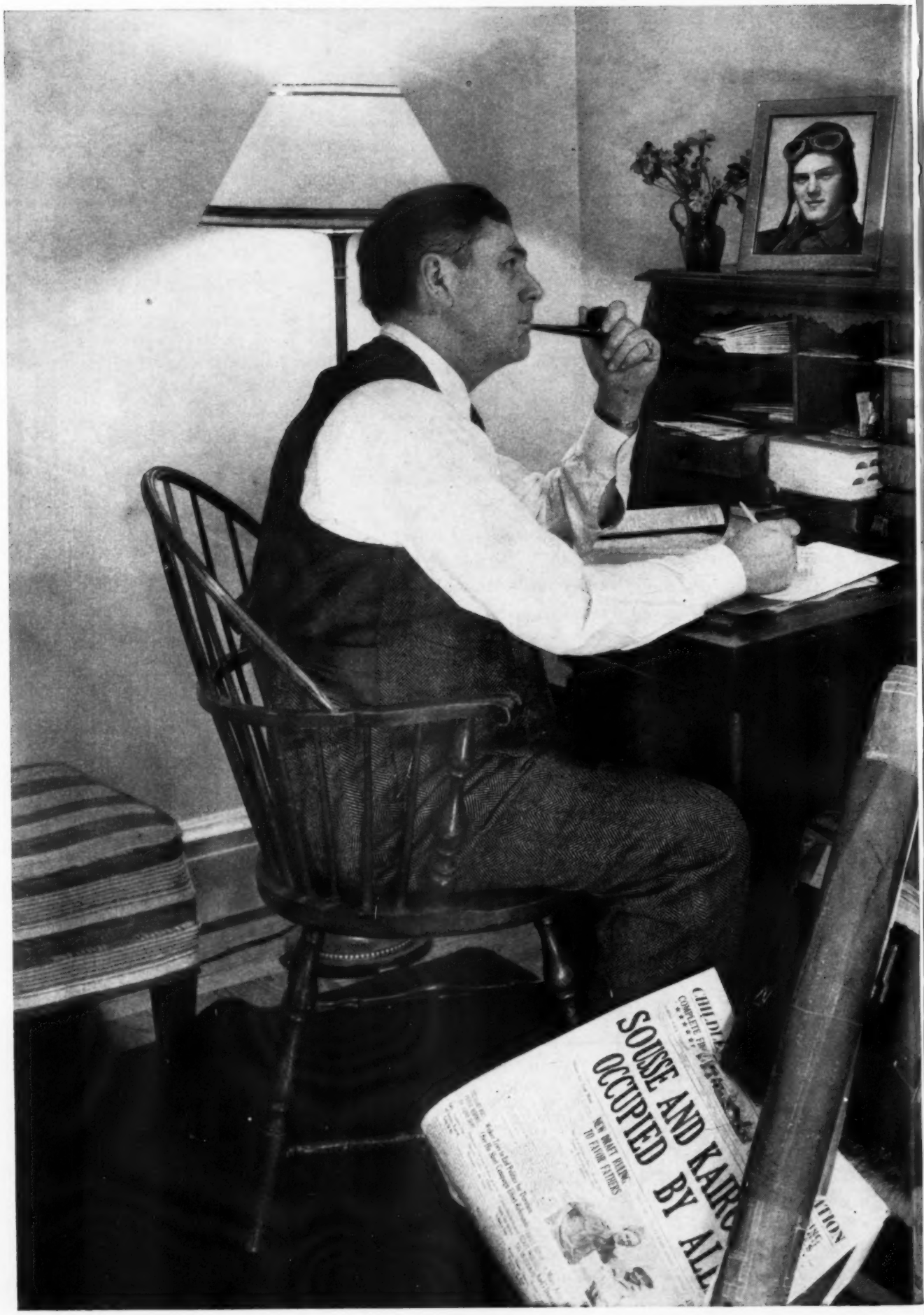

SOUSSE AND KAIR
OCCUPIED BY ALL

TIMES and TRENDS

Raise Your Sights We would be doing less than our job if, in these perilous and troublesome times, we failed to raise the sights of our audience and train the eyes of our readers on the future—that future for which our boys are fighting around the world and, to gain which, 135 million people in this country are expending every ounce of energy, talent, money and will continue doing so, until victory is won.

We don't know when the real, nationwide post-war period will begin. Much blood, sweat and tears will be expended before a true universal post-war period can loom on the horizon. But meanwhile pipelines to the various fighting fronts are being filled with every necessary equipment and, once filled, it will take less of everything to keep them flowing freely and to capacity.

As that happens, one war plant after another will necessarily reduce speed and then automatically will find itself on the threshold to its particular, its individual post-war period. Wholesalers, and the manufacturers who supply them, have that same experience ahead. Some will have it soon, others later, but it will come before the fighting stops.

Therefore, in the final analysis, we are doing no more than our job when we present in this issue a group of articles that are designed to serve as targets for those wholesalers and manufacturers who are ready, able and willing at this time to raise their sights above the problems of the moment to the times that lie ahead.

We have firm and abiding faith in the efficacy of the wholesaler as an essential and economical agency of distribution. We have no doubt whatsoever of his survival. In fact we feel that never before in the twenty or more centuries of his history has the wholesaler more completely justified his existence than he has since the Defense Program and Pearl Harbor pitched him into the toughest period he has ever seen.

We have faith also, that having acquitted himself with such credit during the war, the wholesaler will not fail to set his sights for doing an equally good job in the post-war period.

That is why we propose to point out targets for him to shoot at—whenever they appear on the business horizon.

OUR Advisory Committee Less than three months after the new set-up for wholesalers emerged out of a re-shuffling of the War Production Board we are privileged to publish in this issue the list of members of the Industry Advisory Committee of the Electrical Supplies Section of the War Production Board.

That is fast work, considering all the basic specifications that WPB rules impose upon committee appointments and—equally important—when realizing the fact that prospective appointees not merely had to pass under the microscope of several Washington agencies but also had to be found willing to serve without compensation.

Much credit for this rapid progress must go to N. G. Symonds, Chief of WPB's Industrial and Hardware Supplies Branch (within which the Electrical Supplies Section operates). Immediately after his appointment Mr. Symonds began to take a keen interest in getting every section organized promptly for efficient functioning and he has shown himself sincerely desirous of obtaining the fullest possible cooperation of each industry using the Advisory Committee as one of the vehicles.

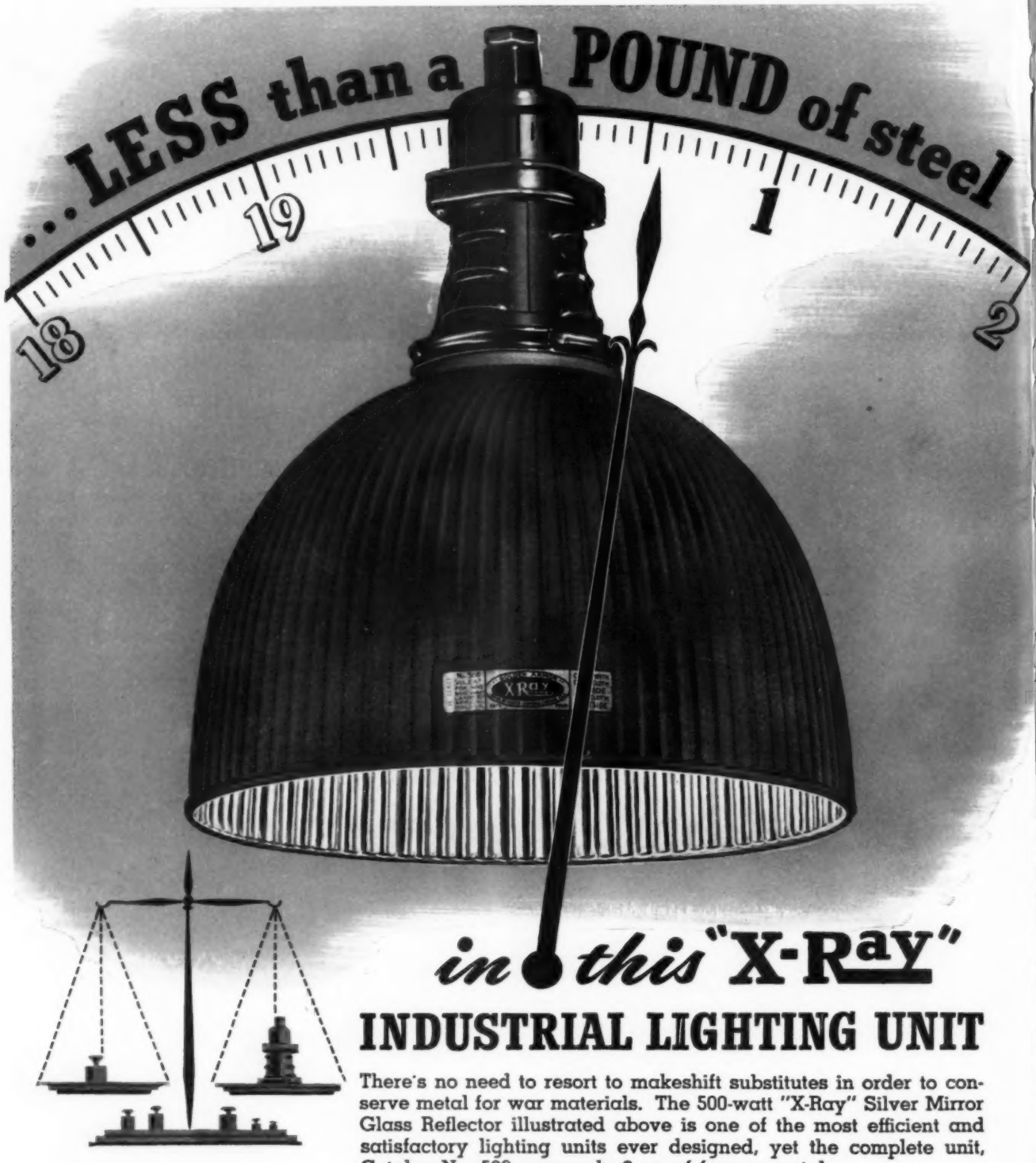
We bespeak for Mr. Symonds, his staff, and for the Advisory Committee the wholehearted cooperation of every wholesaler throughout the country. For those who made dire predictions when the appointees of the re-organized WPB set-up were announced, we prescribe a liberal helping of humble-pie.

★

Inventory Crisis As will be noted in this issue, where WHOLESALER'S SALESMAN presents the Business Index, the size of inventories reported by wholesalers throughout the country has dropped down to a level where, in many cases, stocks must be considered inadequate for meeting minimum current needs.

We know that, until late in 1942, many wholesalers were themselves responsible for this type of condition, because they did not take prompt and full advantage of the mechanisms that had been established by WPB for enabling them to maintain adequate working stocks.

However such is not the case today. Instead, the



Use "X-Ray" Reflectors and conserve critical materials for war purposes. A minimum amount of metal is required in the holder and socket. The reflector itself is made of crystal glass.

INDUSTRIAL LIGHTING UNIT

There's no need to resort to makeshift substitutes in order to conserve metal for war materials. The 500-watt "X-Ray" Silver Mirror Glass Reflector illustrated above is one of the most efficient and satisfactory lighting units ever designed, yet the complete unit, Catalog No. 588, uses only 9 oz. of ferrous metal.

"X-Ray" Silver Mirror Reflectors for industrial lighting are available in various sizes and types for incandescent lamps, up to 1500-watts, and also for the 400-watt Mercury lamp. Long life, low maintenance cost and ease of installation make them the natural choice for relighting industrial plants where lighting must be stepped up to meet wartime production standards. Write today for full information on "X-Ray" Reflectors.

CURTIS LIGHTING, INC.

6135 W. 65TH STREET, CHICAGO

inventory shortage is due chiefly to limitations and curtailments over which the wholesaler has no control. Failure to provide ample replacement stocks is impairing their functioning at a time when wholesalers everywhere are using every means at their disposal to maintain a regular and adequate service to those thousands of war production plants whose production lines must be kept moving if an Allied Victory is to be won.

The newly created Industry Advisory Committee may well give this threatening inventory crisis the right of way for preferred attention at its first meeting.

★

Box Car figures Not so many years ago, old timers grew chesty when they talked about billion dollar sales in the electrical industry. Today, big figures are hardly noticed.

There is General Electric Company, which reports orders received during the first quarter of 1943 at $444,000,000 with sales billed totalling over $\frac{1}{4}$ billion. In the same quarter, Westinghouse billed $155,000,000, booked $226,000,000 in new orders, had nearly $1 billion in unfilled orders on hand. The Philco Corporation reports first 1943 quarter output at eight times that of the same 1942 period.

Those are really more than just box car figures, and yet—who will deny that the industry is still in short pants, still has its greatest growth ahead?

★

No War Profiteering Whenever labor leaders launch demands for higher wages, they voice with the same breath fantastic claims of exhorbitant war profits and fling the charge that business and industry are guilty of gross profiteering.

While those charges are proved as completely false by practically every earning statement that is published, a compilation recently made by the New York *World-Telegram* labels them most completely unjustified by overwhelming proof.

The group of corporations included in the study paid 6 billion dollars taxes in 1941, but paid double that tax toll, namely 12 billion dollars in 1942. Meanwhile the 1942 profits of those concerns totalled $400,000,000 LESS than in 1941.

The same study showed that in 1942 manufacturers NET earnings were only 4 cents on every sales dollar, while in the wholesale and retail field, profits after taxes were only 2.8 cents on each sales dollar.

We wonder who could most readily be convicted of gross profiteering if labor unions had to publish the same type of financial statements as business concerns must do?

★

Contrast According to *Automotive and Aviation Industries*, the year 1942 saw 7287 automobile dealers go out of business, equal to 18 percent of the 40,500 dealers who were in business at the beginning of the year.

The remaining 33,250 dealers survived despite the fact that their total sales of their regular lines in 1942 were less than 7 percent—yes, seven percent—of their sales the year before—1941. It meant each had on the average $7\frac{1}{2}$ new cars to sell against over 90 cars each in 1941.

Contrast that with the record in the electrical wholesaling field, where mortalities appear to be less than 5 percent, and where sales continue to hold well above 1939 levels.

Yet, despite the contrast, automobile dealers, as a business, will survive, just as wholesalers will survive, and for identical reasons—they are performing functions for which so far no one has found an equally economical substitute.

★

Primer on Electronics In previous issues, we have pointed out that electrical wholesalers and their salesmen of today will have a new sales and service opportunity presented to them, when those hundreds of manufacturers of electronic devices, who are now 100 percent on war production, are ready to build for peacetime business.

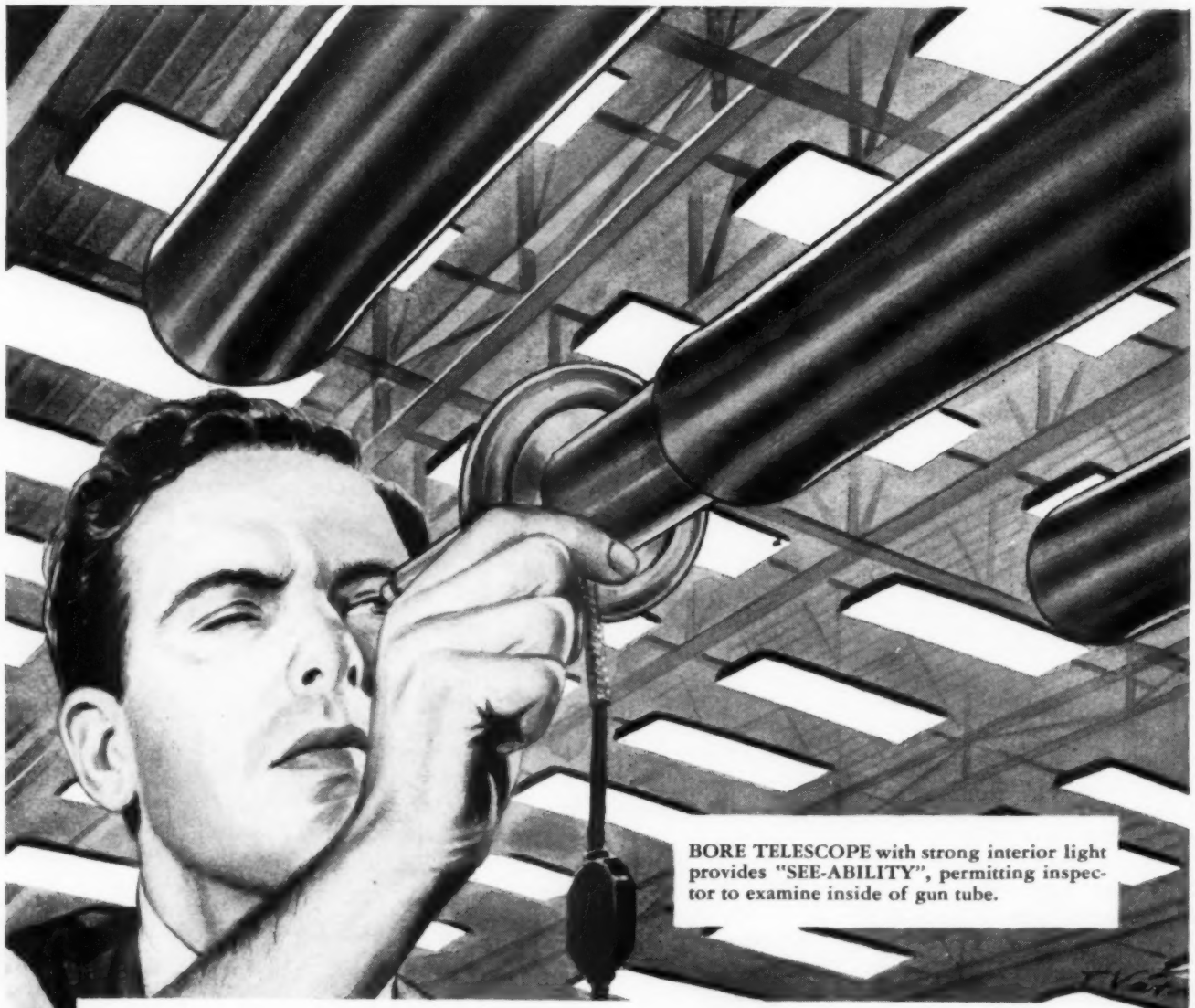
We are convinced that this opportunity will come because only the electrical wholesaling industry can offer a nationwide net-work of experienced sales, warehousing and service organizations through which those manufacturers can obtain intelligent and economical distribution, and can get it quickly.

However, we recognize also the fact that the electrical wholesalers and salesmen of today do not command the same familiarity with terminology, objectives, processes and functions of electronic products that they can claim in their established field, even though their experience as distributors of radios, radio parts, tubes and allied equipment has given them a sound foundation.

Therefore, we propose to commence in an early issue, the publication of a series of articles entitled "Primer on Electronics." Having been prepared expressly for WHOLESALER'S SALESMAN, these articles will cover, in plain, easily understood language what salesmen should know in order to sell products of the electronics industry successfully through being able to advise potential buyers correctly on what products or devices should be used where and when.

EDITOR

"SEE-ABILITY"



BORE TELESCOPE with strong interior light provides "SEE-ABILITY", permitting inspector to examine inside of gun tube.

NOT ONLY MORE GUNS, but better guns, are coming out of the arsenals of democracy. Better workmanship, greater accuracy are possible because of better "See-ability" over the lathes, boring machines, drills, and inspection benches.

Through its knowledge of modern lighting, Westinghouse is contributing daily to improved "See-ability" in our war plants. Knowing that the heart of good lighting is the lamp, Westinghouse has steadily improved quality. Today Westinghouse fluorescent lamps are brighter than ever, and they stay bright from end to end.

TRANSPORTATION—a vital war factor

The effectiveness of our armed forces and civilians alike depends on the efficiency of our transportation

As the battle of Tunisia entered its final phases, with the British and American forces joining hands to crowd Rommel into his last fox hole, Hitler and Mussolini held their twelfth war-time meeting.

One important purpose of this meeting, according to the Berlin radio, was the study of a specially prepared "Survey of Continental Reserves". Topping this list of resources is the item of transportation.

Hitler has a great many headaches these days but, according to no less an authority than the Reich Ministry of Economics, "the central problem of the whole German war effort is transportation". It is, in fact, the Achilles' heel of Germany's War Machine.

The Nazis have become soberly conscious of its crucial importance and Mr. Hitler must wince when he recalls the gigantic miscalculations which led him to neglect his railways.

He counted on a short war, not a long wear-and-tear war and Germany's transportation crisis is getting more critical by the hour. It will play a vital part in its defeat.

This is a war of movement—on land, on sea and in the air. Russia's 2,000 mile battleline, R.A.F.'s 700 mile bombing raids, General Montgomery's 1,500 mile advance last November and the vast area that constitutes the theatre of war in the Pacific make this fairly obvious.

Peace will come when one side gets control over the world's supply of fuel, oil and rubber, for on these three critical materials depend all the vehicles of war—as well as of peace.

An army used to travel on its stomach. Today it travels on its fuel tank.

On the home front, transportation is no less vital. Here it is essential in getting the war workers, their raw materials and their products, to and from the mines, mills and factories that supply our armed forces and those of our Allies. Transportation is a major factor in the nation's ability to out-produce its enemies. Every known method, every type of vehicle becomes essential, for no single group of carriers, freight or passenger, can meet all our needs.

The railroads opened the vast resources of our nation and continue to be the backbone of our transportation system. Today they are doing the greatest job in their history. They are hauling more tons of freight more miles than ever before—33% more than in 1941 and 55% more than in 1918, peak year of the first World War. They are carrying more passengers more miles than ever before—80% more than in 1941 and 24% more than in 1918. They are getting more work out of each car, each engine, and each mile of track than ever before. Private operation of railroads is proving far more effective and efficient in this war than did government operation in the last war.

In contrast to Hitler's Germany, the managers of the American railroads have not neglected their plant except where government priorities forced them to do so. They are turning in an unprecedented performance despite the long starvation period to which they were subjected. During the first World War the total investment in the American railroad plant was about $18,600,000,000. Since then $12,000,000,000 have been spent on improvements and after deductions for scrapped facilities the net increase has been $8,000,000,000. Since the present war in Europe began the railroads have invested about $1,650,000,000 in further improvements, many of them to meet special war needs.

Convincing evidence of the railroads' flexibility in meeting the special needs of all-out war is their performance in coping with the movement of oil to the East Coast. In January 1942, one month following Pearl Harbor, the railroads delivered to the East Coast by tank car less than 100,000 barrels daily. By December they had stepped this up to more than 740,000 barrels and during the week ended April 3, 1943 they

This is the eleventh of a series of editorials appearing monthly in all McGraw-Hill publications, reaching more than one and one-half million readers, and in daily newspapers in New York, Chicago and Washington, D. C. They are dedicated to the purpose of telling the part that each industry is playing in the war effort and of informing the public on the magnificent war-production accomplishments of America's industries.

averaged more than 900,000 barrels per day. By the end of this year they are shooting for the goal of one million barrels a day.

Unlike Germany we have not attempted to control the development and growth of motor transportation according to the "intuitions" of one man but have wisely left it in the hands of experienced competition. That is how our highway transportation system came into being. Growing public acceptance has made it an essential part of our national economy.

The motor vehicle, its limitations set only by the improved highway and the supply of fuel and rubber, has developed to undreamed of proportions. Up to a year ago private automobiles consistently moved more people more miles than *all public carriers combined.* Buses have become an accepted means of mass transportation. Local electric and interurban railways in many cases were converted to bus lines and trucks took over the local freight services. Under these improved operating conditions traffic volume increased. When the war in the Pacific made it necessary for us to conserve our supply of rubber and the U-boat depredations in the Atlantic throttled the flow of gasoline to the eastern seaboard, our motor transport was forced to grapple with the toughest problem that ever had confronted it since it became so vital a factor in the every day transportation.

The "share-the-ride" idea recognizes the need of conserving gas, oil and rubber. This particularly applies to buses, for wherever groups can be assembled for a common destination, buses can be used most effectively. The intercity bus performs for the rural areas the same service that the local bus renders for the residential areas of our cities.

Reorganization of railroad schedules, adaptation of motor transport, rearrangement of working hours, all have contributed to provide a flexible transportation service for men and materials to meet the critical needs of the war effort. Twenty thousand intercity buses are handling 635 million passengers a year which is 69 per cent more than in 1941. The fact that these buses carry a relatively larger percentage of the total coach passenger business than their seating capacity would indicate suggests that here, too, we are getting a more efficient use of these vehicles in terms of passenger loads carried. It is fortunate to note that the geographic location of most intercity bus lines does not coincide with that of the railroads but rather supplements it.

The contribution which the urban transport industry is making to the war effort becomes apparent when we consider that buses, trolley buses and street cars today carry passengers at a rate which promises to exceed the impressive total of 21 billions, as compared with 18 billions in 1942 and an average of 13½ billions for the period 1936 to 1941. And this the industry is accomplishing with a minimum of added equipment and despite a serious drain on its manpower.

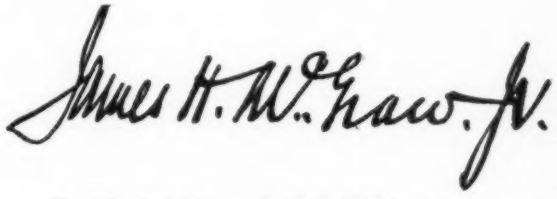
The truck lines, too, are setting all-time records. They have rearranged their schedules, eliminated circuitous routes and coordinated their services with those of other carriers. As this is written, contract truckers with the cooperation of the Office of Defense Transportation are trying to eliminate the empty return trip.

The transportation industry as a whole is face to face with the biggest job in its history. Increasing traffic loads, with little if any new equipment, difficulty in obtaining essential maintenance materials and a growing shortage of manpower, combine to make it that. While federal authorities, acting through the Office of Defense Transportation, took prompt cognizance of this condition, froze equipment and otherwise acted to conserve the vehicles then in service, it was not possible to add sufficient vehicles to keep pace with the increased traffic demand. However, the O.D.T. did lend impetus to the movement for staggering hours of work thereby spreading the peak loads and thus increasing the carrying power of existing fleets of vehicles in city service.

As we review the problems involved in meeting our transportation needs it is evident that we cannot depend upon new equipment alone for their solution. Lend-Lease is taking a considerable share of our much needed output of transportation equipment. The immediate job is up to the rank and file of the transportation industries. It is up to their resourcefulness and devotion to their job. The operating men out on the road, the men in the shops who keep the equipment going, who make the most of the metals and other materials they can have, who salvage, conserve and economize . . . these are the men who must bear the burden of our war load.

Theirs is a dramatic story, a story of cooperation and coordination . . . of ever increasing capacity on a shoestring allowance of new equipment.

For this is a war of movement. According to Joseph B. Eastman, Director of Defense Transportation, both the passenger and the freight traffic on the railroads is to a large extent war traffic – the transportation of troops and civilians on war business, the movement of food, raw materials and finished products required for the prosecution of the war. As Mr. Eastman put it, delayed arrival of troops at embarkation ports, delayed delivery of vital war materials could even conceivably mean the loss of men at the fighting front. And what Director Eastman says of the railroads applies to all forms of transportation. Transportation by bus, by street car, by truck, by train, by ship and by plane . . . all play a vital part in the achievement of victory . . . on the home front and on the fighting front which relies upon it.



President, McGraw-Hill Publishing Company, Inc.

WHOLESALER'S SALESMAN NEWS

Priorities and Post-War Study Dominate NEMA Meetings

Special committee meeting devoted to discussion of future plans for electrical industry. Nearly 600 attend Spring Luncheon. Adam, Brown, King honored with fifty-year certificates

IN keeping with the forward thinking trend of the electrical industry, the schedule of special conferences for the National Electrical Manufacturers Association at its Spring Meeting included a session devoted to post-war planning. This was one of nine special discussions which were added to an already crowded program at the Palmer House, Chicago, from April 20th to 23rd.

Between 400 and 500 members of NEMA were reported as in attendance for the regular sessions. Nearly 600 members and guests were present for the annual Spring Luncheon to hear an address on the manpower situation by Brigadier General W. C. Rose, chief, executive service, War Manpower Commission.

Other subjects covered at special meetings were: Business Development; Codes and Standards; Regulatory Legislation; and War Projects.

An important feature of the Spring Luncheon was the presentation of Fifty Year Certificates to three NEMA members "in recognition of their valued contribution to the industry." These men were:

Fred B. Adam, president, Frank Adam Electric Company, St. Louis, Mo. Mr. Adam entered the electrical industry in 1891 as secretary of the company which his father had just recently organized. When the electric light and power switchboard division of Emerson Electric Manufacturing Company was purchased in 1901, it was placed under Mr. Adam's direction. He became a pioneer in the development of improved designs of switches, circuit breakers, panelboards, and switchboards. In 1922 he became president of the company.

Charles Edward Brown, executive vice-president, the Okonite Company, Chicago, Ill. Mr. Brown spent the first five years of his business career with the Marshall Field Company, starting in 1884. Then he became associated with the McKinlock Brothers, organizers of the Central Electric Company. He remained in

ELECTRICAL PIONEERS HONORED with Fifty-Year Certificates at the Spring Meeting of NEMA were, left to right: Charles K. King, president, the Ohio Brass Company, Mansfield, Ohio; Charles E. Brown, executive vice-president, the Okonite Company, Chicago; and Fred B. Adam, president, the Frank Adam Electric Company, St. Louis, Mo.

What the Trade has been Waiting for:

THE FIXTURE OF THE FUTURE!

THERE is nothing "ersatz" about the new Sylvania Fluorescent Fixture for industry. It is truly "the fixture of the future."

Sylvania engineers took up the WPB challenge to design a fixture without a metal reflector, with a top housing weighing less than 3 pounds.

In addition to complying with these official limitations, they took an important step forward. They designed a fluorescent fixture that will be as good years after Victory as it is today.

Watch for the announcement of "the fixture of the future" in this magazine next month. See how it makes fluorescent fixtures standard and flexible for the first time!

"Everything that's Finest in Fluorescent"

SYLVANIA ELECTRIC PRODUCTS INC.

Ipswich, Mass.

INCANDESCENT LAMPS, FLUORESCENT LAMPS, FIXTURES AND ACCESSORIES, RADIO TUBES, ELECTRONIC DEVICES

the electrical Supply business until 1925, serving as vice-president and director of the company. That year he joined the Okonite Company as executive vice-president and director.

Charles K. King, president, The Ohio Brass Company. Mr. King received his early experience in the electrical industry with the Northwest Thompson Houston Company, working on the construction of electric railways, joining that company in 1890. Three years later he entered the electric railway department of Ohio Brass Company, and in 1895 he became a director of the company. The following year he was made secretary, and in 1905 he was elected vice-president. He was vice-president and general manager in 1927 and until he became president in 1928.

General Rose told his luncheon audience that "essential industry will lose just as many men to the armed forces during 1943 as they have hitherto lost altogether". He asserted that manpower today is "scarce" and that demands already approximate the total national supply. "This year we must add at least two million more people to our working force and four million to the armed forces. Most of the men for the armed forces must be drawn from the labor market," General Rose pointed out. "We cannot prevent this loss," he cautioned, "but we should plan for replacement." He then placed special emphasis on the use of the Manning Table Plan.

TRADE-DIVERSION BILL becomes the law in Minnesota as Governor Harold E. Stassen gives it official approval with his signature.

Minnesota Fifth to Strike at Trade Diversion, Fake Selling

"Discount" selling racket outlawed as Governor Stassen signs Trade Diversion Bill. Fraudulent sales, misleading price tags, and purchase by industrials for employees now illegal in that state

IMPRESSIVE CEREMONIES mark the presentation of the Army-Navy "E" production award to the Thomas & Betts Company at Elizabeth, N. J. Displaying the pennant for the two thousand employees who attended are Commander Samuel J. Singer, U.S.N.R.; George C. Thomas, president of T&B, and former president of NEMA; Joseph Gries, president of Local 1068B, I.B.E.W.; and Colonel Clarence E. Boesch, Corps of Engineers, U.S. Army. Mr. Thomas made an impressive acceptance speech in which he noted with pride that since the company had been in business, there had never been a work stoppage for any reason whatsoever.

INDUSTRIAL selling, as well as fraudulent "wholesale sales," has been outlawed in the state of Minnesota by the recent enactment of the "Trade Diversion Bill" which Governor Harold E. Stassen signed on March 16th. Minnesota is the fifth state to pass such a law. Others are Wisconsin, Mich., Illinois, and Pennsylvania.

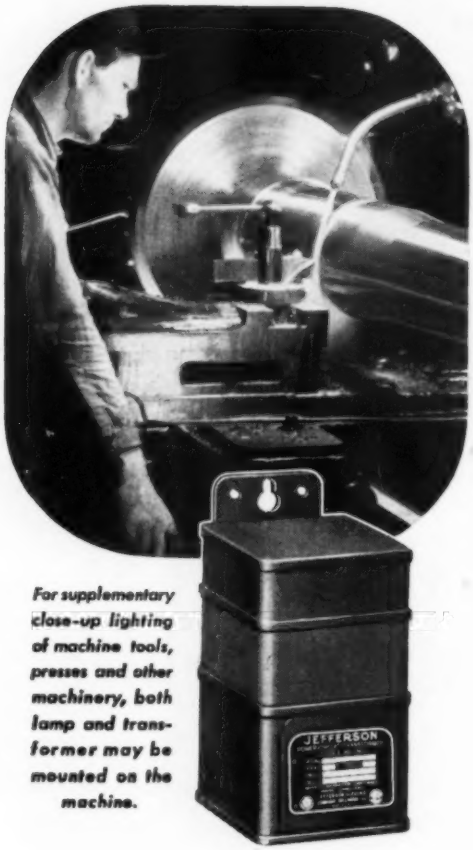
Under the sponsorship of many retail groups, including the Minnesota Council of Retail Trade Associations, the Minnesota Electric Council and others, the bill had been before the State legislature previously, having been recommended for passage two years ago, but failing to reach a vote.

The Trade Diversion Bill makes it illegal for industrial or commercial accounts to purchase or sell for personal use of employees, any goods which that concern does not regularly produce or sell. It also strikes at the discount house by defining as "unfair trade practise" the sale of merchandise at "wholesale prices" when it is not sold at such a price. It also makes it unlawful for a wholesalers to advertise or claim to sell at wholesale unless such sale is made for resale.

The bill prohibits a "retailer" from

(Continued on page 127)

COPPER MUST STILL BE CONSERVED



For supplementary close-up lighting of machine tools, presses and other machinery, both lamp and transformer may be mounted on the machine.

Power-Circuit Transformers eliminate need for separate Complete High Voltage and Low Voltage Circuits

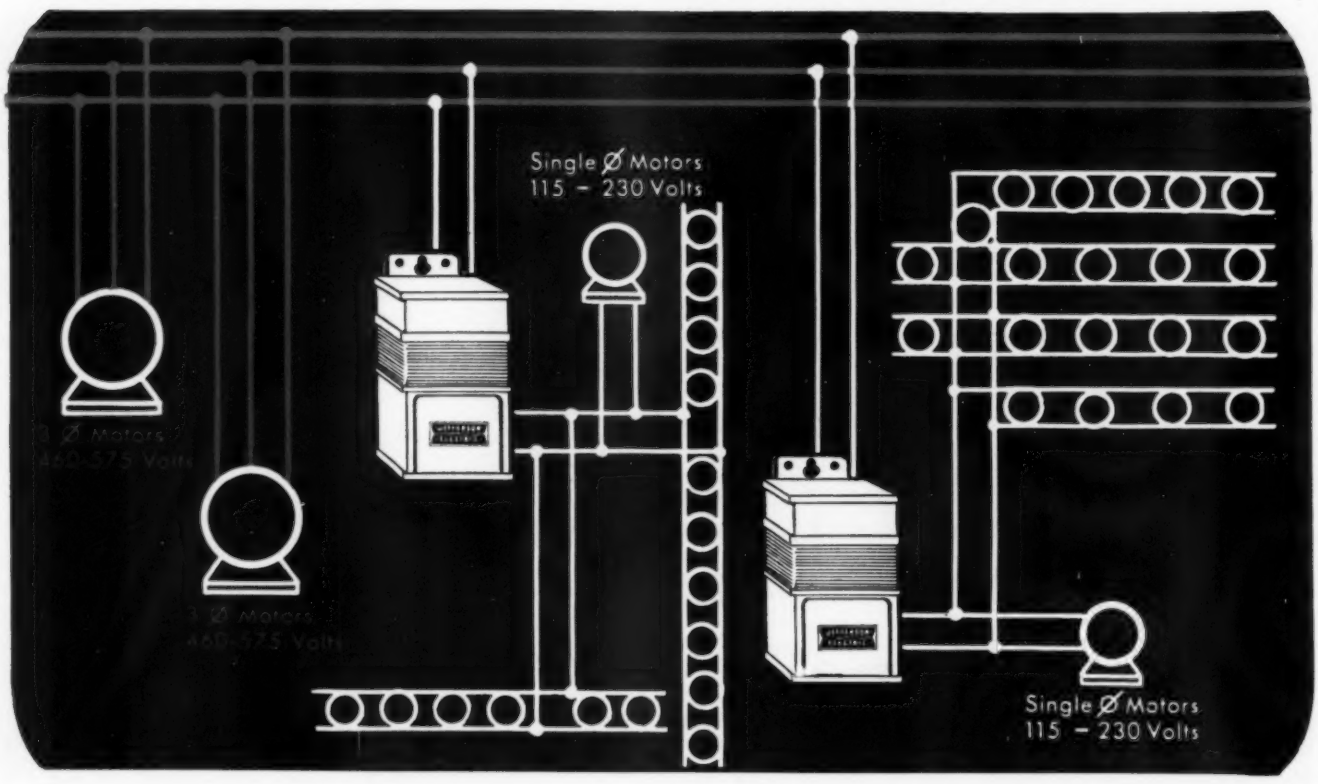
● Both engineering practice and copper conservation requirements dictate the use of only one main distribution of the higher voltage power current while providing for the lower voltage for lighting and small appliance purposes through the use of step-down transformers where current of this voltage is required.

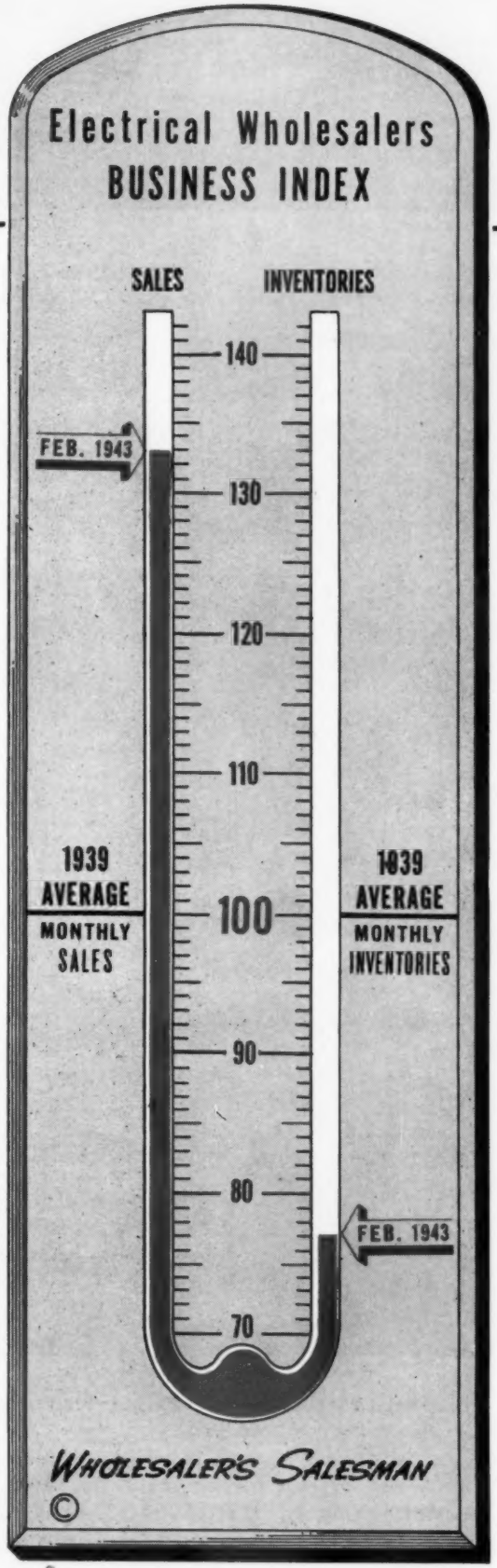
Duplication throughout the plant or building is eliminated and the amount of copper effectively reduced. As the sketch shows—Jefferson Electric Power Circuit Transformers placed at intervals provide the necessary 115-230 volt current by stepping down from the power distribution. These transformers are the dry type and may be mounted on walls, posts or directly on machines . . . Bulletin 421-PCT contains complete data,—write for a copy . . . JEFFERSON ELECTRIC COMPANY, Bellwood, (Suburb of Chicago) Illinois. *Canadian Factory:* 60-64 Osler Avenue, W. Toronto, Ontario.

JEFFERSON ELECTRIC

TRANSFORMERS

POWER CIRCUIT





SOURCE The figures we use as basis for these monthly comparisons of performance in the electrical wholesaling field are collected and compiled by the Bureau of the Census of the U. S. Department of Commerce.

Business Index
For the Month of February, 1943

SALES As reported by 323 electrical wholesalers throughout the country, the sales of electrical goods averaged 33 percent above the 1939 *average* monthly sales. This represents a considerable rise back toward the level of sales volume which was reached in June, 1942, and which was maintained with only slight fluctuation from then to December.

In the previous month, January, sales were recorded at the lowest point since October, 1940, a break in that month-to-month trend of steady sales volume which now, through the bouncing back of sales in February, seems to be closed.

The demands for electrical materials for maintenance and repair of war industries appears to be reaching a quantity that may eventually offset the diminishing demands due to new warplant construction. It has been noted in recent interviews with individual wholesalers that once again the sales of electrical materials are beginning to follow seasonal trends. If such is the case, it would account for the decline in January, and the increase shown in February sales.

INVENTORIES With the average of inventories in February, as reported by 285 wholesalers, registering at 77 percent of the 1939 average monthly inventories, it appears that supplies have been flowing from the manufacturers at a fairly healthy rate, considering the limitations on size of inventories and the shortages of materials.

What amounts to a drop of only 3 points in the volume of inventories during January and February may be an indication that the steady decline that saw inventory levels drop from 192 to 80 percent of the 1939 level during the 12 months of 1942, has been arrested. It may mean also that, as the result of the limitation orders, shortages of critical materials, and the absence of most consumer goods, wholesalers have finally reached that minimum represented by only those quantities and products permissible and replaceable under current limitations.

COLLECTIONS For the country as a whole, collection percentages averaged 65 percent in February. This was 6 percent below the revised collection percentage reported for January, and 7 percent below the percentage of February of last year. Accounts receivable were reported as 17 percent below the same month of last year.

FIVE SHIPS FOR ORDINAR

U. S. Rubber Laytex Army Assault Wire requires only one-fifth the shipping space of ordinary communication wire ...releases four times the room for men, material, food for overseas.

Light, strong and plenty tough, Laytex is the most flexible of all insulation for electrical conductors. It is waterproof, resists wide-range temperature changes...and will not shatter under concussion. Conductors are perfectly centered...because the unique Laytex Process applies the purified insulation in liquid form.

Laytex Assault Wire meets every basic requirement of the Armed Forces. It weighs less than 30 pounds per mile, twisted pair; has a breaking strength of 50 pounds per conductor; a talking distance of five miles. Millions of feet of Laytex Assault Wire are now on active duty wherever American Armies are in the field.

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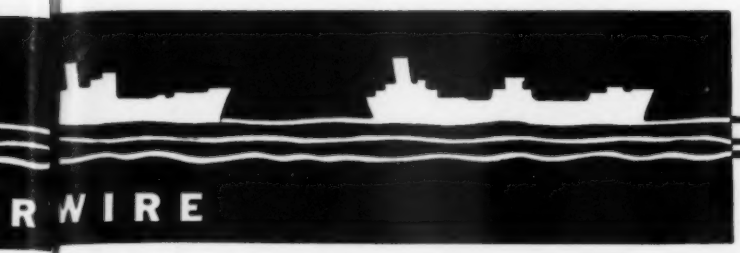
UNITED STATES



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ONE SHIP FOR
U. S. LAYTEX ASSAULT WIRE

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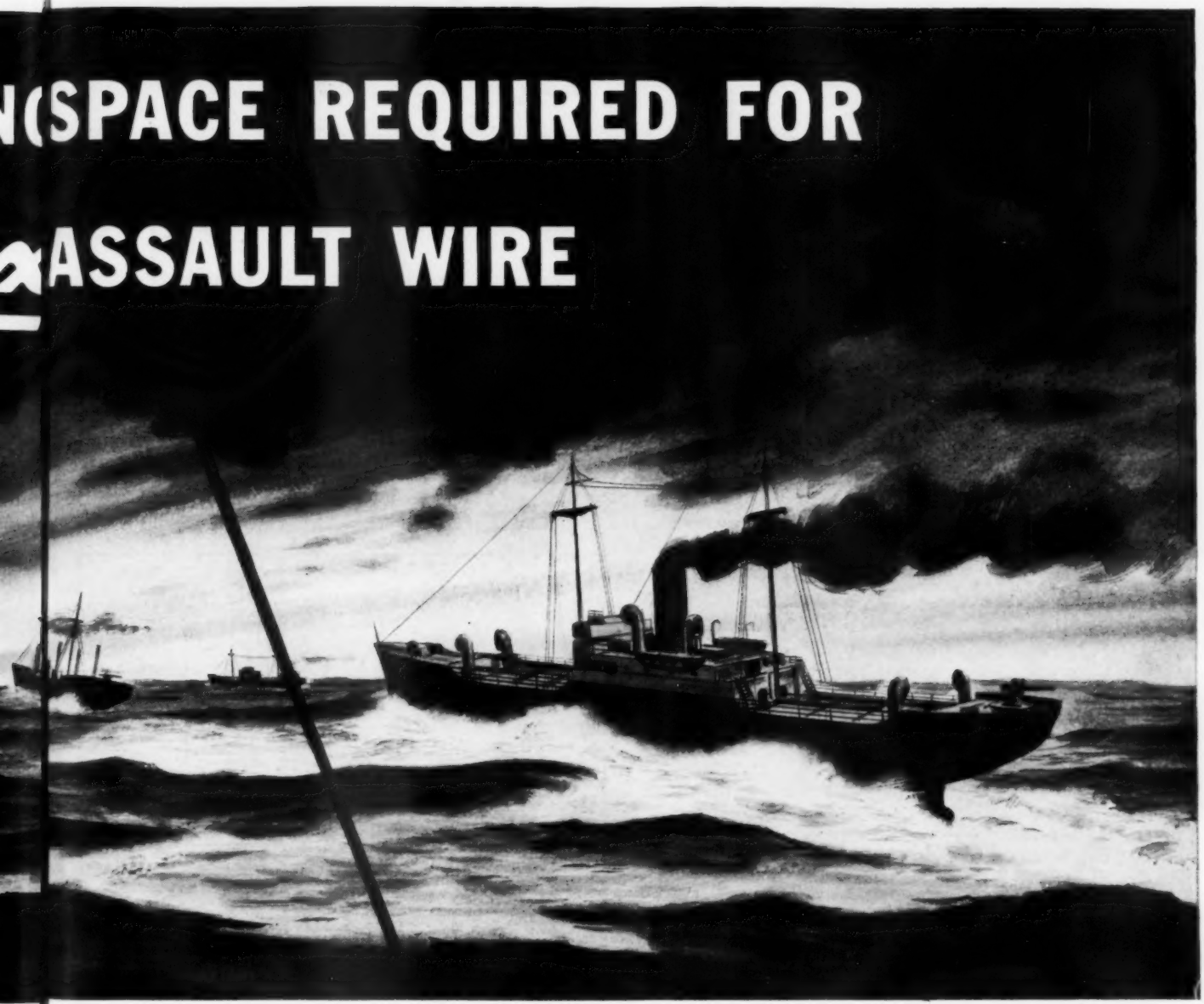

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WHOLESALER'S SALESMAN BUSINESS INDEX

REGIONAL ANALYSIS

FEBRUARY, 1943

A MARKED upswing in sales of electrical goods by wholesalers in February, compared with January, was reported from every one of the nine geographical regions, so that when averaged for the country, wholesalers sales showed a 9 percent increase for February compared with the previous month.

Most noticeable in the regional reports was the increase in sales in those states which, since the early period of Defense and War construction, have not been reporting sizeable gains in business. These regions, Nos. 4, 5, 6, 7, and 8, recorded February sales increases of 13, 4, 24, 7 and 20 percent, respectively, over the preceding month. As these regions are made up primarily of agricultural and mountain states outside the centers of intense war production, the reported increase in the sales of electrical supplies becomes more conspicuous, particularly as new restrictions and shortages of critical materials would be expected to slow up the flow of electrical goods everywhere, excepting to only the highly-rated industries.

Yet, this unusual increase in sales apparently did not have a serious effect on inventories in those regions. Wholesalers there reported their February inventory levels only slightly below the level of January, whereas, in January they reported declines from the December inventory level.

The gains in sales as reported by regions 1, 2, 3 and 9, the industrial areas of the Northeast, East North Central and Pacific Coast, seem to follow the gradually increasing needs for electrical goods to maintain and repair the war industries.

The condition of inventories in each of the nine regions, as reported by 285 electrical wholesalers throughout the country, is more encouraging than might have been expected since the controls on inventory and the shortages of materials started to take their toll in the stockroom back in January, 1942.

Figures in this table apply to the geographic divisions as outlined and numbered in red ink on map above

SALES February, 1943 Compared in % with		Trading Region (See Map)	INVENTORIES February, 1943 Compared in % with	
January 1943	February 1942		January 1943	February 1942
117	82	1	94	42
102	88	2	88	47
111	52	3	99	43
113	46	4	96	37
104	70	5	101	46
124	49	6	89	29
107	61	7	98	33
120	59	8	90	39
114	78	9	97	49
109	**68**	For **U. S. A.**	**96**	**43**

All but two regions reported inventories at levels within 10 percent of January, in spite of the marked increase in sales reported. Region 5, the South Atlantic states, reported stocks of electrical goods as slightly higher than they were in January. And all but three groups of states showed a better inventory condition in February compared with January, than they did in January compared with December.

In the regions showing the most severe drop in inventory levels (Nos. 2, 6 and 8) February shipments were not offset by receipts of materials, although in January all three reported increases in inventories over the December level.

National Electrical Wholesalers Association

War Conference

Program

HOTEL STATLER **BUFFALO, N. Y.**

May 23-26, 1943

SUNDAY

Meetings of the Executive and Management Committees

MONDAY

9:45 A.M.—Meeting of Commodity Committee Chairmen
10:30 A.M.—Commodity Committee Meetings with Manufacturers
Other Committee Meetings
Evening —Meeting of the Executive and Management Committees

TUESDAY

9:30 A.M.—Opening Conference Section
Report of Program Committee—Mr. W. I. Bickford, Chairman
Remarks—Mr. Karr Parker, President, Buffalo Chamber of Commerce
Address—President D. Lyle Fife
Remarks—Managing Director Chas. G. Pyle
Counsel's Report—Dana T. Ackerly, Esq.
11:00 A.M.—Adjournment (promptly)
11:30 A.M.—Caucuses for Nomination of Executive Committeemen.
1:00 P.M.—Luncheon
Address—Mr. William L. Batt, Vice-Chairman, War Production Board

WEDNESDAY

9:30 A.M.—Conference Session
Committee Reports (Resolutions, etc.)
Report of Commodity Committee Meetings
Discussion
Remarks by Mr. N. G. Symonds, Deputy Director, Wholesale and Retail Trade Division, War Production Board
12:05 P.M.—Meetings of Atlantic and Central Divisions
2:00 P.M.—Conference Session
Reports of Atlantic and Central Division Meetings
Election of Executive Committeeman-at-large from Central Div.
Clinic for:
PD-1X application procedure
Orders and regulations governing warehouse stocks of copper wires and cables
Informants: Mr. Julian A. Hawks, Wholesale and Retail Trade Division, WPB; Mr. Joseph W. Mullally, Asst. Chief Wire Mill Branch, WPB; Mr. W. F. Jessup, Chief, Warehouse Sec., Copper Division, WPB.
Adjournment.
Organization Meeting of Executive Committee.

Program tentative at time of going to press.

The Wholesaler's Fighting Orders On WPB's Copper Wire and C

Wholesalers are recognized as members of the country's Copper team and must make certain that they know all the signals given here and play their part in winning the fight

THE United States copper supply reached the high figure of about 2,465,000 tons in 1941, and was increased to nearly 3,000,000 tons in 1942. Despite the fact that the United States supply of copper in 1942 thus was greater than the entire known world output in 1939 and despite the shutting off of all copper to non-essential needs, the war program could have used more of the metal if it were available.

The electrical wholesaler plays a very responsible and necessary part in the distribution of that part of the United States copper supply which is used in the form of copper wire and cable. Because the supply is less than the demand, copper wire and cable has been made a Controlled Material. The responsibility and duty of the electrical wholesaler is to fill Authorized Controlled Material Orders to the extent of his available inventory.

It might be said that an Authorized Controlled Material Order is a check on the bank of supplies, copper wire and cable, and the electrical wholesaler is a Branch Bank. He must not honor checks which are not properly endorsed. He must use every effort to prevent the waste or mis-use of this critical material. He must urge the substitutions of material in stock on orders requiring non-stock material if the consumer can possibly accept such substitute because actually the electrical wholesaler is a trusted guardian of a part of the wire and cable supply.

The electrical wholesaler during the year 1942 performed a tremendous job. It was a job well done, well carried out and done as a whole in a most unselfish manner. You are to be commended for this performance. You assisted the construction program to a great extent. You took care of the Maintenance, Repair and Operating Supplies of existing plants. You prevented many delays in construction. All this was done during a time in which the supply of copper wire and cable was limited. Yet the job was done. Again I say, you are to be commended for your performance.

The producers of copper wire and cable have also done an excellent job. They have delivered copper wire and cable in ever-increasing amounts to our Armed Services and to our Allies in this war. This was a new demand upon their production. It necessitated their curtailing consigned stocks and cutting off old customers. However, as we all know, the demands and the needs of the Army, Navy, Maritime Commission, Air Forces and our Allies come first in time of war. Producers were all anxious to maintain their relationships with their former customers and with their distributors but when called upon to furnish needed material to the Armed Services, they turned their mills inside out in order to fill such needs.

I call this to your attention because I think you should know of their great performance. These producers have operated under very rigid regulations and orders of the War Production Board which were necessary in order to do the job that was laid out. They have cooperated in every possible way and are also to be highly commended for their performance.

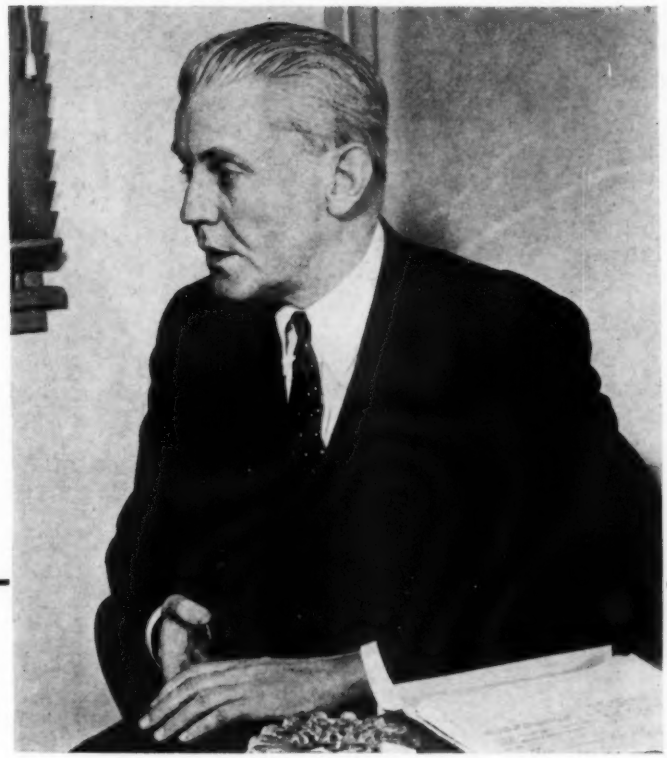
Under the Controlled Materials Plan, the producer of copper wire and cable continues to operate his mill, regulate his production and distribution in accordance with the Provisions of CMP Regulation No. 1. We are sure of the producers' continued cooperation. Under the Controlled Materials Plan the electrical wholesaler is governed in his distribution of copper wire and cable by CMP Regulation No. 4. This regulation and supplemental instructions issued from time to time by the Copper Division provide for a uniform method of filling Authorized Controlled Material Orders and for a normal and regular replacement of material so sold.

There is no doubt in my mind nor in the mind of any man in the Copper Division as to the cooperation and assistance we are going to receive from the electrical wholesaler and his men. We know it will be one hundred percent just as it has been since 'Pearl Harbor.'

We have set up a Warehouse Section in the Wire Mill Branch of the Copper Division to handle

Cable Team

By H. O. King, *Director,*
Copper Division,
War Production Board



OWI Photo

all matters pertaining to the distribution of copper wire and cable through electrical wholesalers and other distributors. This section is operated by men who by experience and ability are able to recognize problems of the electrical wholesaler and to assist them and other distributors in any and all problems relating to copper wire and cable.

The General Construction Program of 1941 and 1942 demanded large amounts of copper wire and cable. This program has been, to a great extent, completed. Most of our munition plants are built and in production. They must be maintained and their production must not cease. Here is where the electrical wholesalers play an important part from now on. There is not enough material available to allow each manufacturing plant to carry a stock for all maintenance. Such a procedure would call for a tremendous outlay of copper. The electrical wholesaler who has learned the requirements of his customers will have to order replacement material in such a manner as to have a balanced stock. He will then be able to serve these many manufacturing plants when their need for Maintenance, Repair and Operating Material occurs. He will act as their storeroom.

In my opinion, the stocks of wire and cable in the hands of electrical wholesalers is either now or soon will be adequate to handle the program. Those stocks which had become depleted because of lack of replacement, due to low rating of replacement orders, have been augmented through the medium of PD-1X application. *Such procedure is no longer allowed.* The Copper Division decided that inasmuch as the total program was carried on during 1942 on the existing stocks in the hands of wholesalers, if stocks were maintained on a two months' basis, based on 1942 sales, there would be sufficient stock located throughout the country to safely carry on the needed program of 1943 and later. Of course, this assumption is based upon the orderly and regular replacement of material sold from stock. It is regrettable that the copper supply situation does not permit all electrical wholesalers to carry as much stock or material as they would in times of peace. You all know that this cannot be done today. Any stock of wire and cable that is not actively moving at all times is a waste of material. Can we justify large stocks today, knowing that every pound of copper we keep out of inventory can readily be used in the form of ammunition or some other article of war, needed by our men on the battle front? I think you know the answer to this.

Therefore, all stocks of wire and cable of all electrical wholesalers are a common trust. These total stocks should be used to serve the authorized needs of that area. If a consumer has need for material and one wholesaler does not have it in stock, the consumer should be directed to another wholesaler in the same area who does have the material in stock. The consumer has the right to the material when he needs it and back-ordering on the mill will not accomplish or fill this need.

Remember that this job requires unselfish, one-hundred percent team work. Nothing less will gain us our end. I wish to thank the electrical wholesaler for the job he has done in the past and the spirit in which he has done that job. I wish to thank him today for the continued performance and cooperation which I know will be forthcoming. Together, as a team, the electrical wholesaler, the producer of copper wire and cable and the Copper Division of the War Production Board will win their part of the battle of the production line.

MR. WHOLESALER:

Here is the most important, most direct, most significant, straight-from-the-shoulder message ever sent from the War Production Board to the wholesalers of this nation

By N. G. Symonds, *Chief*

Industrial & Hardware Supplies Branch
Wholesale and Retail Trade Division
War Production Board

THE Wholesale & Retail Trade Division is dedicated, along with other duties, to the task of representing the wholesaler and his organization in the War Production Board. The Industrial & Hardware Supplies Branch of that Division is charged with the duty of seeing that the wholesalers of goods made from critical materials such as steel, copper, aluminum, etc. receive equitable distribution of those goods. It is unfortunate that the available goods do not meet the demands.

That fact makes both of our jobs more difficult but it is, by the same token, a challenge, and I have every confidence that we will get enough goods to you to keep you in business, to the end that you can serve the public sufficiently to sustain civilian morale in these difficult times and at the same time act frequently as a reserve for our armed forces.

We hear from every side what a splendid job our country's production force has been and is being done. The papers are quite properly filled with instances of almost superhuman production results, and we join in the praise that is due the men in the production line and those administrative planners that have accomplished so much.

But we should never forget that all the production in the world would be of no value unless we had proper distribution of the products of our farms, our mills, our mines.

That is the job that the wholesaler has a definite part in, and too little recognition is given to that fact. The public seems to take for granted the fact that his food, his clothes, his every comfort and necessity is so readily available to him.

Without wholesale distribution, we would be sadly deficient in supplying those needs.

The wholesaler usually buys in large quantities or carload lots and sells to the retailer in smaller quantities and thus saves in transportation, as well as in supplying a greater variety of products. He makes possible our varied diet of today, the many comforts that we have, and is a large contributor to our present day standard of living. He enables the small producer to secure distribution that would be impossible otherwise, and he does it with a gross profit that in these times is so small that the net profit nearly, if not quite, reaches the vanishing point.

Not long ago, Undersecretary of Commerce, Wayne C. Taylor, made this statement when he appeared on Theodore Granik's American Forum of the Air:

"In concentrating on the problems of production, I believe we have overlooked, or at least postponed, giving proper attenion to the problem of distribution. **Production comes first, but production without adequate distribution is meaningless.**

You can't tell 133 million widely scattered people to 'come and get it!'"

That is a very true statement, and we are working with the Manpower Commission so that the essentiality of our services for at least our key men will be recognized. It is hoped that any suggestions any wholesaler may have on this subject be presented to your local Manpower offices.

In early days, each community was largely able to take care of itself, but as our means of transportation improved and our cities began to grow rapidly, the problems of mass production and systematic distribution developed together, Without our mass production today, our war effort would still be feeble, and without proper distribution, that mass production would never have been available when we so sorely needed it.

We grow our wheat, our corn, and our hogs, largely between the Alleghenys and the Rockies, but we distribute the finished product in flour, lard, bacon, etc. all over the world.

We mine the bulk of our iron ore in the Upper Great Lakes and produce the finished product along the Great Lakes or a short distance therefrom. That finished product, steel in all its different shapes and forms and alloys, is distributed to countless small factories throughout the country, and they in turn, find their pots and pans, their autos, their nuts, bolts, and screws distributed through wholesale warehouses to the public.

We grow our fruits and our vegetables in highly specialized regions and distribute them through whole-

NATHANIEL GARDNER SYMONDS

Nathaniel Gardner Symonds is Deputy Director of the Wholesale and Retail Division of the War Production Board.

He was born in Ossining, New York, and was educated at Stanford University, graduating in electrical engineering in 1901. After a short period with another company, he joined the Westinghouse interests on January 2, 1902. He served the Westinghouse Company in various capacities, finally becoming Vice President in charge of sales in October 1932. He retired from the Westinghouse Electric & Manufacturing Company August 31, 1941. About two months later he was requested to serve in the old Office of Production Management in Washington as a consultant and left Chicago to take up his duties in Washington December 7, 1941, which was the day Pearl Harbor was attacked. He has been in the OPM and its successor, WPB, ever since, serving in various capacities. The latter part of January 1943 he was made Chief of the Industrial and Hardware Branch of the new Wholesale and Retail Trade Division. Since then he has been appointed Deputy Director of the Wholesale and Retail Trade Division.

Mr. Symonds' home is in Hinsdale, Illinois, a suburb of Chicago.

salers. No small retailer could buy in carloads and they expect the distributor to keep their shelves filled.

Yes, we take the distributor for granted, **and you distributors need to do a better job of selling the value of your services to the public. You owe it to yourself and you owe it to our Country to see that our excellent distribution system is not crippled through legislation or theoretical ideas put forward under the guise of benefit to that public which you so ably serve.**

It is vitally necessary to control practically all "hard goods" that are available today. It is feasible to control that material at the wholesale level, but only feasible if we have the whole-hearted support of the wholesaler. **He must see that the material he receives goes to those persons or places where the need is most essential, and be denied where there is no essentiality involved. In effect, he must see that the goods are equitably distributed.** If that is not done, then some form of rationing at the retail level will go into effect and that means certification, much more paper work for both you and your retailer, and an almost impossible policing job.

What is the Industrial and Hardware Branch doing to promote the ideas just expressed?

We are trying earnestly to bring to the attention of the other Divisions in the War Production Board what you have that contributes to the War Effort and Civilian Economy, and urging those Divisions to make greater use of the "hard goods" services. We are organized along Industry lines insofar as the wholesaler is concerned, and we are staffed with men that know your problems and have an understanding sympathy with your difficulties.

To bring you closer to us, we are organizing Industry Advisory Committees, carefully selected as to size of houses, as to geographical representation, and as to membership or non-membership in the Trade Associations. We are trying to give all classes proper representation.

We must all recognize the fact that there are not enough goods to satisfy the abnormal demands, and we will do our best to provide equitable distribution of what is available.

Equitable distribution does not mean equal distribution in these times. Equitable distribution means that the most goods will go to those localities that, because of pressing needs in the war effort, need a greater supply, than the population, as measured by the 1940 census, would indicate. Equal distribution means that the available goods would be distributed equally, based on the 1940 census which is the last population index we have to go by. In other words, more "hot shot" batteries will go to the rural areas than to the cities, and more hand tools will go to agricultural localities and active war industry cities.

We will strive to keep ahead on the processing of PD-1X so that a minimum of delay will ensue.

We will aim to modify L-63 and PD-1X whenever we find a better formula or a better way to do the job we have before us.

We believe in the wholesaler, and we will aim to cooperate with you to the end that all of us will contribute to the best of our ability to winning this war.

And when this war is over, the wholesaler will definitely come into his own, for he will be needed in ever increasing fashion to distribute the tremendous volume of consumers' goods that will be called for by a starved public.

J. J. McCaffrey
President, The McCaffery Company, South Bend, Ind.

D. Lyle Fife
President, Fife Electric Supply Co., Detroit, Mich.

George F. Hessler
Vice-president, Graybar Electric Co., Inc., New York, N. Y.

J. P. Hamblen
Partner, Southern Electric Supply Co., Houston, Texas

W. J. Kranzer
President, Crannell, Nugent & Kranzer, New York, N. Y.

W.P.B.'s Electrical Supplies A
A True Cross Section of El

A DIFFICULT JOB, WELL DONE!

THAT'S what this writer told officials of the WPB, who had been charged with the task of selecting members for the Industry Advisory Committee of the Electrical Supplies Section of WPB's Industrial and Hardware Supplies Branch.

Few business men, and probably only a few wholesalers realize the care with which members for such committee are selected because of the very exacting standards that must be met.

Basic requirements on which WPB will brook no compromise is, that all sizes and all types of concerns and as many sections of the country as possible must be represented on the committee. The object of these specifications being to have many shades of opinion represented and also, to prevent any possibility of having some special interests or some large groups or some single section of the country exert a dominating influence on the actions of the committee.

How well those requirements are met in the make-up of the Electrical Supplies Committee can be measured best by a brief analysis of its roster, which discloses readily these important points:

(1) Independently operating wholesalers are represented by nine members against three members from nationally operating chains. (One from each group.)

(2) Seven of the nine independent members operate wholesale houses of medium size—the classification into which the majority of wholesale houses would fit—and two members operate small houses. (All size and volume estimates having been obtained from best available and reliable sources.)

J. H. Fisher
General Manager, Westinghouse Electric Supply Co., New York, N. Y.

A. C. Prange
Manager, Supply Sales, General Electric Supply Corp., New York, N. Y.

D. A. Smith
Secretary, Graham-Reynolds Electric Co., Los Angeles, Calif.

es Advisory Committee.....
of Electrical Wholesalers

P. O. West
President, Doubleday-Hill Electric Co., Inc., Washington, D. C.

F. R. Eiseman
Secretary-Treasurer, Revere Electric Supply Co., Chicago, Ill.

(3) The nine independent members all operate in different states, well spread across the country and well scattered sectionally, viz: New York, District of Columbia, Michigan, Indiana, Illinois, Missouri, Mississippi, Texas and California.

(4) Association membership was not considered a requisite for membership on the WPB committee. Two members belong to no association. Two members are active in both regional and the national association. Eight are members of the national association.

One problem which in some cases caused much delay in obtaining acceptance of an appointment on the WPB committee from eligible wholesalers was the fact that these committee members *must serve without compensation* and travel to and from meetings *without travel allowances from the government.*

Obviously in these times of great pressure and a critical shortage of manpower, few of the medium-sized or smaller wholesalers could see their way clear to accept the responsibilities involved and make the sacrifices in time, money and effort, because doing so would seriously cripple their business.

Therefore the WPB officials who finally completed their task with such eminent fairness deserve the thanks of the electrical wholesaling industry while the Advisory Committee deserves the full confidence and wholehearted support of every wholesaler.

O. FRED. ROST, *Editor*

P. S. We regret that at press time, photographs were not available of the two other committee members: D. R. Cohen, president, Glasco Electric Co., St. Louis, Mo., and L. E. Salmon, president, Tennessee Valley Electric Supply Co., Tupelo, Miss.

The How—When—Where and Why Of M

A definite, all-embracing wholesaler policy is vital to the electrical manufacturer. This policy should provide for adequate training of the wholesalers' salesmen, an established plan of territory allotment, a method of properly compensating the wholesaler, and the right mental attitude, says this merchandising expert

A MANUFACTURER has wholesalers distribution only when wholesalers stock his merchandise. And he can have a genuine *wholesaler policy* only when wholesalers are stocking his products.

A *wholesaler policy* is more than a statement in words as to what a manufacturer plans to do in case he should secure a wholesaler or two . . . translated into action, a wholesaler policy is a *method* of handling wholesalers, a plan of doing business with wholesalers and having wholesalers do business with a manufacturer.

Such a policy embraces (1) A mental attitude accepting the wholesaler as a desirable and necessary part in the mechanism of distribution; (2) A method of compensating the wholesaler for his services in warehousing, stocking, selling and handling credits; (3) A persistent and continuing method of protecting the wholesaler's interests in his territory; (4) A thoughtful cooperative working plan that will systematically encourage and develop the wholesaler's sales of a product by helping him to visualize and attack the logical sales prospects in his territory and assist him (and his salesmen) to develop sales volume by means of:

(a) Applied manpower.

(b) Sales Promotion plans and material.

(c) Advertising.

In order to mentally visualize a wholesaler, the manufacturer must build a concept of him in harmony with the facts.

A wholesaler is not necessarily a distributor. Part of a wholesaler's value lies in the fact that he wholesales a large number of items and thus has reasons for constantly-traveling salesmen that transcend the possible requirements and dollar expenditure permissible for a single item.

Having secured a wholesaler, the manufacturer must study his personality and sales tendencies in relation to himself, his salesmen and the accounts of all kinds contacted by his organization.

What strong lines does he carry that help to make him a logical seller of these products? Does he have good factory and mill connections? Does he render good service? What is his history? Does he stand well with his trade? How many salesmen will he permit the manufacturer to instruct in his line?

The modern concept of a wholesaler is that he is effective for a manufacturer in proportion to the latter's willingness and ability to thoroughly train the salesmen in selling his line.

It is no longer a question of enthusing them and leaving them with a piece of literature; it is a matter of training them definitely and precisely in the functions of the particular product; in an analysis of true values; in service problems; in competition; in the advertising program that backs up the product and, of course, in the list prices and discounts.

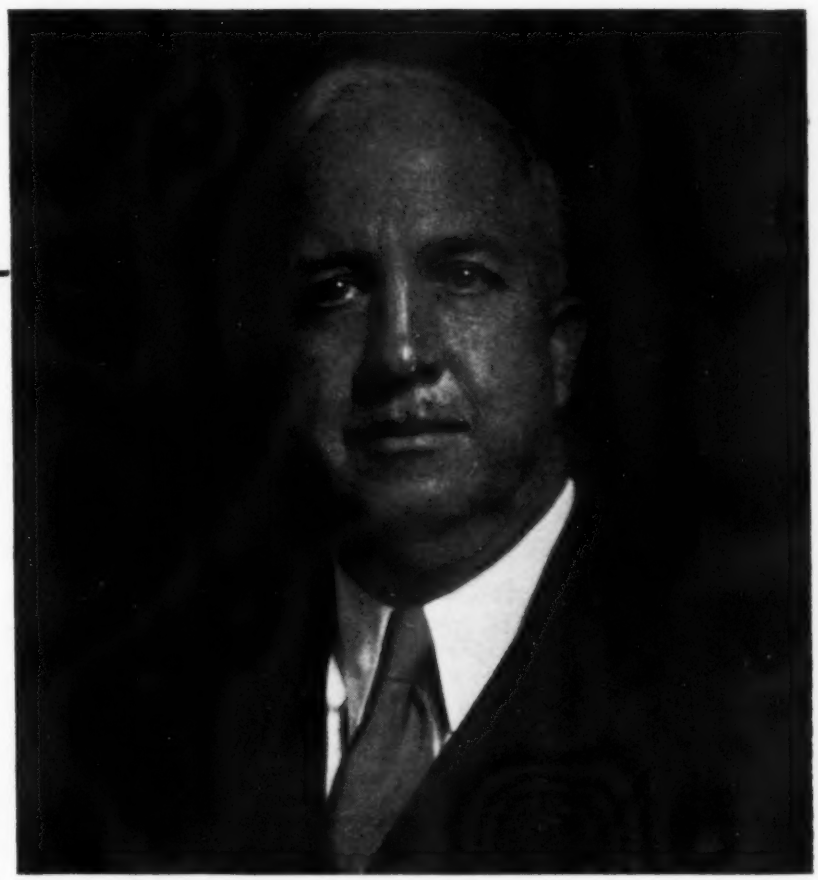
It is better and cheaper to spend a week or ten days developing the wholesaler and his salesmen into a competent working force able to carry on efficiently, than it is to make a quick contact and assume that he knows the story and can tell it because he has a catalog. We all know that the story of one product is only one of many he has listened to. So the manufacturer's problem is to make the wholesaler see genuine opportunity in his particular line by making selling an easy job.

Too many wholesalers' salesmen fade out of the picture because they are not properly equipped with essential facts, history, background and specific information concerning the recommended uses and installations of the product. They need to be shown, demonstrated to, taught and told. Some will need less than *others*. Experience in similar lines, general ability, receptiveness and application are as varied in wholesale salesmen as in retail. **But observation of salesmen over many years has taught me that every dollar's worth of time a manufacturer spends arming a salesman with information and facts is certain to bring forth multiple results in sales.**

It's difficult to sell unless you are at least partial master of the product to be sold. Somebody said selling is made up of inspiration, information and perspiration. If a salesman absorbs the information you hand him you won't have to worry about developing the inspiration or the perspiration. He will furnish both.

Modern Selling Through Wholesalers

By Maxton R. Davies*



***Mr. Davies, vice-president and treasurer of Foster & Davies, Inc., Cleveland advertising agency, has a background that makes him well qualified to write on manufacturer-wholesaler relationships. He has been both a wholesaler and a manufacturer and has served as sales counselor to manufacturers of electrical appliances. His partner since 1926, F. Carlisle Foster, is also well known in the electrical field. Among the present clients of the Foster & Davies agency are: General Electric Lamp Department, Nela Park; IES Better Sight Lamp Makers; Fleur-O-Lier Manufacturers; Decorative Lighting Guild of America; and other companies in the electrical field.**

Before founding his own advertising agency in Cleveland in 1922, Mr. Davies had served agencies in Detroit and New York, and had been an advertising manager, assistant sales manager, editor and publisher, and, as mentioned previously, a wholesaler and a manufacturer.

The real salesman is always able to impart information that he has had given to him. His joy and sales boosts come when he is able to put the facts and their significance into his own words with ease and sincerity.

We have covered swiftly some of the points that are embraced in any wholesaler policy; acceptance of the wholesaler as a necessary economic advantage in the scheme of distribution; the desirability of schooling everyone in an organization on the importance of these values; the need for salesmen training; cooperation; sales promotion and proper discounts and prices. All of these are fundamental in any satisfactory wholesaler relationship.

Exclusive Wholesalers or Free for All

Now comes a mooted point. Is it better to have a single wholesaler in each community and protect him on all sales in his territory or is it better in the long run to make a line available to all recognized houses? Nearly everyone has his own ideas on this subject—and they vary with the degree of success that the different situations show.

In some localities one wholesaler seems sufficient, and some manufacturers are unreservedly dedicated to an exclusive franchise policy, confident that on a long-run basis it pays greater dividends. Some get one wholesaler to build groundwork for them and then when business rolls in, divides on the theory that the single wholesaler is becoming too important. Such a policy, though seemingly smart, eventually gets noised about and the manufacturer may find himself with wholesalers but without wholesaler support.

There is a vast difference. But in cities of 300,000 and over, with certain kinds of equipment, an exclusive policy might prove unprofitable to everyone. Why? Here again one must qualify his remarks. It might be profitable if that wholesaler were the outstanding concern in the field. It might be unprofitable if the wholesaler were a second line house. Why? Because even with products possessing exclusive features, it is often difficult to get users of a prod-

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5. High Adhesive Strength
6. Uniform Thickness
7. Uniform Width
8. Excellent Tackiness
9. Strong, Durable Core
10. Colorful, Attractive Boxes

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1. Guaranteed Footage
2. High Grade Compound
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8. High Insulation Resistance
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HAZARD INSULATED WIRE WORKS — DIVISION OF THE OKONITE CO.

WILKES-BARRE, PENNSYLVANIA • OFFICES IN PRINCIPAL CITIES

The author of this article, through his position as advertising counselor to several electrical manufacturers, has been important in the promotion of adequate lighting. Since Pearl Harbor, his efforts have been behind the sale of lighting equipment that can be made within the WPB restrictions, such as this GE "duration" reflector.

uct to do business except through their regular or preferred wholesaler.

The Purchasing Agent may like one wholesale house and not like another. What's he going to do? He may buy something technically just as good from the other wholesaler he likes, but, if he can get a certain product from any firm, then that pleases him. The wholesalers divide the business and nobody pushes it, but all fill orders for it. So that plan fosters direct selling.

What do I mean by direct selling? I mean that the manufacturer hunts the prospects and sells them and then says, in essence, to his customer, "Which wholesaler do you want this to come through?"

This situation will always be in the picture when certain large jobs are involved **but tomorrow's sales opportunities in most items lie in thousands of small sales to stores, factories, schools, hospitals, institutions of all kinds and the wholesaler's salesmen must make these sales in the course of their daily job. Otherwise they will go unmade.**

The question of exclusive vs. general wholesaling may become acute at this point . . . because why should a wholesaler representing a dozen lines go out and sell a particular line? What particular "drag" has a manufacturer to compel him to do this? That's a good place to pause and consider the facts and face them fearlessly.

Let a manufacturer look at his own line without prejudice and see what he has in the product that will induce a hard-boiled wholesaler's salesman to take off his coat and go to work for him. Has it anything? Is there any feature of superiority in service, economy, durability, efficiency that will help customers to buy with ease? Is the price better? Are the discounts longer or shorter? Does the product look any different?

Most manufacturers have no difficulty in discovering some lovable feature about their own products. But can they bring it out so that it counts for something important in the mind of the prospective wholesaler that involves sales analysis at close range?

Everyone has something. It may be name-prestige, advertising, history, personalities of company officials, all of these count . . . and sometimes personal contacts and helpfulness count more than anything else. Customer acceptance is a powerful tool, a strong advertising campaign aimed at establishing product identity as a weapon to conjure with.

But in the long run an honest manufacturer who is making salable goods finds that with all these, there is something else that will intrigue the wholesaler and his salesmen more than anything else and that is to provide them definitely with a practical, workable answer to two important questions:

"How can we sell this stuff? To whom can we sell it?"

Adequate cooperation and adequate and specific sales promotion plans for each wholesaler in his territory will do a lot to bind him and his salesmen to such a manufacturer.

That is so simple and so well understood that only a few manufacturers do anything about it.

Some furnish reprints of ads and special sales literature booklets and such stuff, but the thing that counts is a practical, workable merchandising sales plan with materials to carry it out and make it work.

Today—during the war—the plan still counts. Wholesalers want goods to sell in order to pay expenses and keep their jobs . . . but still they need to be intelligently helped and, the better and more comprehensive a manufacturer's job of helping turns out to be, the better his wholesalers will prove to be.

In conclusion, may I say that **any manufacturer who wants real wholesaler support—which means, definite cooperation, genuine push—should visualize his wholesaler's future and instead of playing a game of expediency should work on a long term program, confident that true support of his wholesalers by his company will result in equally true and loyal support from his wholesalers.**

TODAY—Wholesalers Are In
TOMORROW—Looms Their Greatest O

By Max McGraw*

LIEUTENANT Commander Mildred McAfee, organizer and leader of the WAVES, humorously told her first class of Navy girls, "Women are very essential—sometimes." By "sometimes," she doubtless meant wartimes and peacetimes—which is just another way of saying *all* times. And I'm sure we'll agree that no briefer span can cover woman's essentiality.

In the same way, I contend that the electrical wholesaler is "very essential—sometimes" . . . in war, in peace, and any other time you can think of. To me, the fact is so self-evident that I wonder how any contrary opinion can still persist. But it does, to some extent. I was conscious of it through all my twenty-five years as an electrical wholesaler. I have seen the question cropping up during the recent years of economic experimentation, along with discussions of grade labeling, consumer cooperatives, and the abolition of advertising. And I have seen many of my good wholesaler friends honestly disturbed—wondering whether their business really was essential.

Believing as I do that America can't get along without the wholesaler, I feel that anything I can do to set these doubts at rest is worth doing. I happen to be convinced that the postwar period will bring the greatest opportunity that the electrical wholesaler has ever known—and I feel sure that the right preparation for taking advantage of that opportunity must include an absolute conviction that the business he is fighting to maintain during these troublous times is basically right and fundamentally necessary.

I say this with the utmust sincerity, even though I happen to head an association of electrical manufacturers not all of whom have found in the wholesaler the solution to the problems peculiar to their businesses. Some have set up specialty distributors, others have established their own branches—and in doing this they have exercised the manufacturer's right, and his duty, to deliver his products to the consumer in the most efficient and economical manner.

It is easy, too, to see why the electrical wholesaler has not been able, in some cases, to obtain distribution and develop volume on major appliances such as washing machines, refrigerators, and radios. The methods of his business were formulated in pre-appliance days, when he was a handler of staples, much as the hardware jobber is today. But the progressive wholesaler has proved his adaptability to changing conditions. With specialty departments and specialty salesmen, many wholesalers offer a service that commands the heartiest respect of manufacturers. And I think these alert wholesalers actually benefit from the competition of divergent methods of distribution. It is training them for the coming great period of postwar expansion.

War has strengthened wholesaler's position

I believe, too, that there is a silver lining to the cloud of difficulties that World War II has brought. Nobody has had to face more serious problems than the electrical wholesaler, beset by inventory shrinkages, priorities, the freezing of appliance manufacture, and a hundred other handicaps. But, taking a broad view, one very important and favorable thing has happened. A lot of people who once considered the electrical wholesaler non-essential *now know that he isn't.*

Just as in 1917 and 1918, so once more, in 1943, those starry-eyed notions about cutting out the middleman in war procurement, in the interest of speed and economy, have completely evaporated. The WPB was not slow in establishing a Distributors' Division. **And an official of that division recently summed up the situation by declaring, "Without the electrical distributor, the war program would come to a grinding stop."**

America's electrical wholesalers made it possible for our war effort to get under way promptly. Stocks were available instantly, at strategic points, for building cantonments and war plants. Urgent orders for hundreds of items, from as many different manufacturers, were shipped in *hours,* when weeks would have been needed for direct purchasing.

Trained salesmen were ready to help—men who

Indispensable To Our War Effort! Opportunity, IF THEY'LL TAKE IT

***Seldom does an editor get the thrill of receiving a manuscript which conveys so completely and convincingly a particular and urgently needed message, that he gleefully consigns to the waste basket his own attempt in that direction and instead publishes the contributed article. Yet, that is exactly what happened after the original manuscript of this article reached us.**

Ever since Max McGraw was elected president of the National Electrical Manufacturers Association we have urged him to prepare a special message for the electrical wholesalers of the country. Always the stresses and strains of these times, pressure of duties as president of the McGraw Electric Company, extra demands upon his time by duties to NEMA and other war-time activities provided Mr. McGraw with plenty of valid reasons for begging off.

We do not recall just what we said to give extra emphasis to our most recent appeal, but somehow, we must have touched a chord not previously reached because to our delight he agreed to oblige and—in time for publication in this, the NEWA-May Convention issue.

We value deeply the privilege of carrying this message to our readers. It deserves careful study by everyone who is interested in the electrical wholesaler.

O. FRED. ROST
Editor

knew switch and panel boards, motors, power apparatus, control equipment, illumination. To harassed military and industrial purchasing agents, many of them new to the job, these wholesalers' representatives, with their knowledge of available sources of supply for needed materials, were able to give invaluable assistance as warehouse stocks became exhausted. It did not surprise me at all when the Army, naming a Director of Purchases, picked a man who started out as an electrical supply salesman.

Just as the electrical wholesaler helped to get the war machine started quickly, he has helped to keep it running smoothly. In every section of the United States, war industries large and small, public and private, are turning to the wholesaler for an immediate "on hand" service that is possible through no other channels.

And now—eighteen months have gone by since Pearl Harbor, and the electrical wholesaler is still functioning ably and courageously. He has taken his man-

"The 'E' Also Stands for *Every* One of Us!"

"If you have a son or daughter my age, you know what my world was like a year or so ago. Dates, dances and clothes were the important things. And for you they were probably playing golf, buying a new car, and beating your quota on products like R & M Fans.

"Things have changed a lot since then. For a year now, I've worked in the R & M plant, helping men and women who are making things to help win this war, and who have sons, husbands and sweethearts fighting on every front.

"When the Army-Navy 'E' was presented on April 30, I noticed that our people didn't seem to get excited. They were too *serious*. They just shook hands all around when the ceremony was over, and went back to work determined to do an even finer job.

"It wasn't until the 'E' pin was fastened on my jacket that I realized it was *my* responsibility, too . . . that the 'E' belongs to *every* one of us who worked to earn it . . . that even my little job is important to winning the war.

"I'm telling you all this merely to let you know that everybody at R & M is doing his level best to speed the day when we can live our lives the way we want to once again . . . the day when firms like ours can build more and better things for you, your customers, and Americans everywhere."

ROBBINS & MYERS, INC.
SPRINGFIELD, OHIO

power cuts along with everybody else, he has paid his taxes and bought his share of War Bonds—and, vastly to his credit, we find that, by the end of 1942, only a negligible number of reputable electrical wholesalers had been forced out of business for the duration.

It is idle to prophesy how long this war is going to last. Most of the estimates I have seen are largely based on wishful thinking, and I don't care to add to their number. But I do feel that post-war *thinking* should begin now, even though it may be a bit early for post-war planning.

I believe it's time for the electrical wholesaler to be thinking of what may happen in his business—in '44 or '45 or whatever the year of victory may be. And I am absolutely certain in my own mind that the most *optimistic* sort of thinking is justified by the facts of today and the prospects of tomorrow.

The picture of post-war business

Today we see the essentiality of the electrical wholesaler's function tested and proved by the impact of war. Tomorrow we shall see that function expanded by economic forces of such power and scope as to stagger the imagination.

Some of these forces may be clearly foreseen. We all know the needs that have been sidetracked, waiting for the war machine to clear the right of way. There is the dammed-up need for millions of new homes, hotels, and apartments. There is the vast backlog of postponed public works—Federal, state, and local. There are the overdue schools, libraries, and churches. The electrical industry must fill this demand—and we know that, as in the past, a large part of the volume of goods needed must move through wholesale channels.

Also, there is the accumulated buying power of a nation of 135,000,000 people, with billions in War Bonds put aside, not so much for a rainy day, as for a *sunny* day, when money can again be spent for electric ranges, refrigerators, radios, appliances, and electrical remodeling. There will be a tremendous *new* market for such goods and services, in addition to a tremendous replacement market, to take up the slack of long months of wear and tear.

The electrical industry must also be ready to assist in the re-conversion of war plants to peace-time pursuits. That will be another job for the wholesaler.

It seems to me that these opportunities are obvious—it doesn't require much foresight to chart them, or to appreciate their magnitude. But there are other elements in the picture that call on us all to exercise our imaginations—to attempt to discern what may not be so obvious. Suppose we look in the crystal ball at the shape of things to come!

Perhaps there is a clue in the recent organization by NEMA of an Electronics Section. Behind that development is the firm conviction of the electrical manufacturers of America that the science of electronics will actually remake the world in which we live. Under the acceleration of war, the last year or two have seen progress that might have required decades in times of peace. Hundreds of new electronic devices are already in use—and *thousands* of applications of electronic principles are certain to come, for industry and home.

The electrical wholesaler of tomorrow will sell electronic equipment.

The age of steam made America great. The age of electricity has made it greater. Today our industry is 90 percent electrified, yet I feel we are still only on the threshold of the electrical age. The next ten years will, literally, be an electrifying era.

I imagine that all of America's established electrical manufacturers will be watching with keenest interest for the post-war emergence of *new names* in their industry. We can be certain that some of the plants that are now making war equipment will turn to electrical appliances. The airplane builder may make washing machines, the bomb-sight contractor may bring out a toaster. In any event, the alert electrical wholesaler is going to find new opportunity to grow.

Especially worth noting is the fact that these new competitors will, in many cases, be unfamiliar with the strategy of selling consumer products. Their background will be that of mass production, not of merchandising on a national scale. They will have sales organizations to build and train, and trade contacts to establish. Under such circumstances, the electrical wholesaler, with a sales setup ready to function, can get in on the ground floor. I don't mean that other methods of distribution will not be employed by some of these newcomers—and employed successfully, just as they are now in some lines. But I do mean that the wholesaler will "have the edge"—**if he'll take it.**

Wholesalers will need to be versatile

This is going to require imagination, alertness, elasticity—the ability to develop new services to meet new needs—the refusal to attempt to force new opportunities into old strait jackets. But I am confident that the electrical wholesaler will be equal to the occasion. He will be ready with the nucleus of a well-trained organization. And he will be able to offer the *stimulus* that will attract salesmanship of the highest type.

You see, I haven't even a shadow of a doubt about the brightness of the future in store for the electrical wholesaler. I don't want to seem over-optimistic—I don't want to paint too rosy a picture. But let me say, with the utmost sincerity, that I feel it is hard to overstate the possibilities.

The other day I was talking to a friend who happens to be a very successful industrial chemist. He said, "If I were starting my scientific career all over, I'd choose *another* field. Now I'd choose electronics."

I feel just as he does about the future of electronics. But, not being of a scientific turn of mind, my choice, if I were starting from scratch today, probably wouldn't be one bit different from what it was when I actually started, quite a goodly number of years ago.

I think I'd start over as a *salesman* for an up-and-coming electrical wholesaler—to be in at the *real* beginning of America's Electrical Age.

Residential, Commercial, Pacemaker of

There's a quick-breaking job ahead for wholesalers when construction for civilian needs gets under way again. It's a job that will need advance planning, organized information, flexibility and good service

MUSIC to the ears of every wholesaler will be the news that the construction industry is expected to be one of the first to swing into action after the war.

And because builders face no long wait for re-tooling operations or for production pipelines to fill, they will set about answering the demands of that market without delay. Materials which might have been earmarked for war purposes will be diverted and turned to peace-time use. The electrical wholesalers' share in the sale of such materials will run into big figures.

It looks like a safe bet, then, that wholesalers will have but little time to catch their breath after war-time activities have ceased before they will be called upon to swing into the huge job of supplying electrical materials for a stupendous program of peace-time construction.

In planning to meet the electrical needs of the construction industry, it is well to consider what the demands on the wholesaler may shape up to be.

Residences, commercial, industrial and public buildings have been and will be most urgently needed. The Stop Construction Order of April 9, 1942 erected a dam behind which a new flood of unfilled wants for necessary civilian construction is climbing steadily higher and higher.

Residential building, long considered the backbone of construction in peace-time, has not caught up with current needs since the depression of the early 30's. To those shortages, existing at the beginning of the defense program, after the war will be added the normal demands that have piled up since the Stop Construction Order, plus the new demands that are growing to large proportions as the back-log of post-war buying power is mounting through high wages, savings, bond buying and current shortages of consumer goods.

It is anticipated that considerable of the post-war residential building will be in the mass housing field. That will involve operations large enough to make mechanized site preparation, mechanized material handling, preparation and prefabrication worth while.

Economists measure the potential post-war market at from 900,000 to 1,600,000 housing units per year. While an impressive percentage of those units are expected to be the more expensive hand-craft type of residences, a large portion probably will cost only between $3,000 to $5,000 per unit. *Engineering News Record* estimates that the post-war construction budget for housing will range between $2½ billions and $4 billions. Even conservative estimates of the portion of that sum to be spent for electrical materials indicate that electrical wholesalers will have a chance to enter many attractive sales on their books.

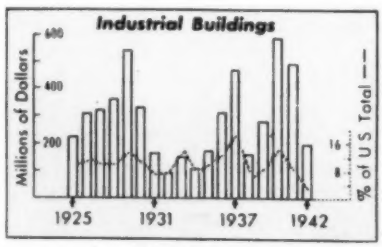
Another phase in construction's job of providing much-needed living quarters is the accompanying trend toward rebuilding of cities, not piecemeal but by the square mile. Much of this implies housing. Neighborhood development is part of such an activity and will involve many other construction needs.

Residential development, particularly large housing projects, automatically will create a need for commercial structures. Schools, hospitals, health centers, markets, business structures, recreation facilities, theaters, gymnasiums, libraries must be provided to take care of the needs of the growing community.

The industrial construction picture is not so clear-cut. On the one hand industrial construction for war purposes has increased the square feet of productive floor area in this country beyond belief. On the other hand are new products and whole new industries whose growth has been speeded by the war that will need more and more factory floor area and that conceivably may take over some of those one-time war plants. From here it looks as if the post-war industrial building problem will be largely one of conversion from war to peace-time uses and of modernization of existing facilities.

Together, according to estimates made by *Engineering News Record*, commercial and public and industrial building will add up to a potential budget of $3 to $4 billions.

Looking at it another way, post-war construction volume will be what post-war national income can



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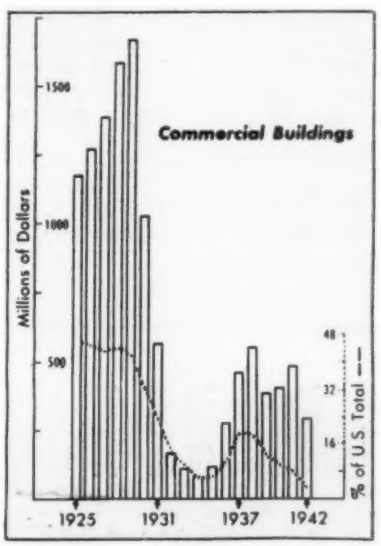
Municipal Construction Post-War Comeback Parade

By J. H. Aveling

support. And Arthur R. Upgren, Chief, National Economics Unit, Bureau of Foreign and Domestic Commerce, estimates that the supportable post-war investment for building construction will be about $10 billions.

Estimates such as those given above, running into box-car figures and coming from authoritative sources, indicate that electrical wholesalers can look to the construction industry for a big slice of their early post-war sales.

The lion's share of that business will go to those wholesalers who have done intelligent advance planning, who have organized and trained their sales force, who have paved the way for replacement inventories, and who have in every possible way prepared to fill the needs of the huge market which will be waiting for the end of the war or a "Start Construction" order to register its impact.



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In planning ahead to handle this business, the wholesaler must analyze the potential of his own territory. Is residential construction the big need—will it continue to be after the war? Is the local commercial and public building program far behind the procession? Will local industrial plants need materials with which to convert from war to peacetime production or with which to modernize out-of-date facilities?

To the foregoing considerations must be added the realization that after the war, more than in any comparable period in our history, new materials, new techniques, simplification and standardization of materials, simplification and mechanization of processes of assembly will affect the building construction picture. The war has, among other things, speeded greatly all developments in plastics, light metals, textiles, electronics, wood and plywood. The effect of those changes upon the construction industry must be taken into account by the wholesaler who is planning ahead.

A large Pacific Coast wholesaler did an outstanding piece of advance planning 18 months before Pearl Harbor, and his performance record serving war plants both before and after Pearl Harbor is ample evidence of how long-term planning pays out.

Early in 1940 he became convinced that defense business would dwarf in importance all his other activities, so he launched a preparedness program in his organization.

First he instituted an educational program for his outside and inside staff, outlining the problems he anticipated and ways of meeting them. Dealers and contractors got a picture of the firm's thinking from the salesmen on their regular calls, and were kept interested and informed by follow-up bulletins to the trade. Prospective markets were studied, analyzed. Prospect lists were revised, taken apart and enlarged in certain categories. Inventories were analyzed, detailed inventory records were kept and inventory demands studied. Contacts with manufacturers were strengthened and put on a more cooperative basis.

When the heat really was on, this period of preparation proved its value. Then there was no time for the staff to do anything but get out war orders, no time to gather basic information on the territory, no time to make educational contacts with dealers and contractors, no time to get set on inventory records and problems. All that counted when the heat was on, was the job of delivering electrical materials when and where needed.

Obviously those who *should* know believe that there's a big construction job ahead, and inevitably electrical wholesalers are going to sell a lot of materials for it. It looks as if it's going to be a quick-breaking job where everyone concerned will be called upon for a maximum of information, flexibility and advance preparation. It looks as if the wholesaler who gets ready in the days before the big push starts will be the one who gets the bigger slice of the profits.

Helping American War Industries to PROTECT MANPOWER is an important part of our WAR TASK

How Benjamin Lighting Equipment is Being Used to Help Promote Safety, Combat Fatigue and Conserve Manpower

There are 3 major ways in which the right kind of lighting as provided by Benjamin Lighting Equipment is helping American Industry to meet the manpower problems involved in war production.

+ **1.** It protects plant personnel against accidents
+ **2.** It conserves energy and reduces fatigue
+ **3.** It helps older employees to "stay on the job."

1. SAFETY. Today the Safety problem is accentuated by the influx into industry of new, inexperienced men and women, many of whom are unaccustomed to industrial occupations, and by the increase in the average age of the working force. Also, demands for sustained, high speed production and day and night shifts have increased the problem of fatigue as a cause of accidents.

Good Lighting is helping in the solution of this problem in two ways. First, enough light enables the individual to see hazards easier and more quickly.° It takes time to see.* The more light the less time required to see and to act.** The fewer accidents!°

Second, Good Lighting makes seeing easier and less tiring. The elimination of direct and reflected glare, deep shadows and spotty lighting, and the provision of sufficient light, properly directed, diffused and uniformly distributed help minimize eyestrain and fatigue,* the enemies of alertness against accidents.

2. FATIGUE. Not only is fatigue the cause of accidents but also an important factor in rate and quality of production, absenteeism, health and morale. Lighting is helping to solve the fatigue problem by reducing the drain on the worker's reserve energy. For seeing requires energy!*** The better the lighting, the less the drain.*

3. OLDER EMPLOYEES. Good Lighting benefits the older employee and those with deficient vision of all ages even more than those with normal vision.* More light helps compensate for visual deficiencies and the loss of visual acuity due to age. Given this additional light, the manpower represented by this large group can be conserved and efficiently utilized for war production.°

+ For data and case reports on the value of Good Lighting, send for the new report of the Illuminating Engineering Society, "Value of Good Lighting in War Production—A Survey of Opinion from a Cross Section of American Industry." For your complimentary copy, address:

BENJAMIN ELECTRIC MFG. CO.
Division GG, Des Plaines, Illinois

** From I. E. S. Report "Artificial Lighting in War Production"*
° From Booklet "Plant Efficiency" published by War Production Board

BENJAMIN PRODUCTS

*

INDUSTRIAL LIGHTING EQUIPMENT
including fluorescent, incandescent and mercury lamp units

EXPLOSION-PROOF UNITS
DUST-TIGHT UNITS
VAPOR-TIGHT UNITS
FLOODLIGHTING EQUIPMENT

*

MARINE LIGHTING EQUIPMENT
MARINE WIRING DEVICES

*

SOCKETS AND OTHER WIRING DEVICES

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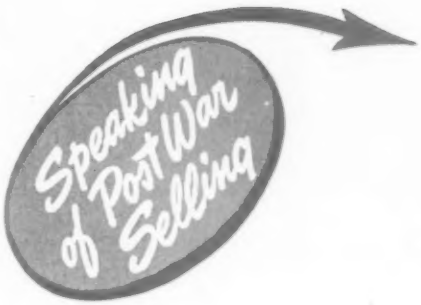
SIGNAL EQUIPMENT
including Sirens, Horns, Buzzers and Telecode Relays

BENJAMIN TRADE MARK
Lighting Equipment

Future Sales Prospects in RADIO



Rarely does identical opportunity knock on the same door twice, but the disruptions in specialty distribution due to war-time stoppage of all production of radio and appliances for civilian use give electrical wholesalers a second chance at doing AND KEEPING the job of distributing radio and allied products at wholesale

By Ralph R. Beal*

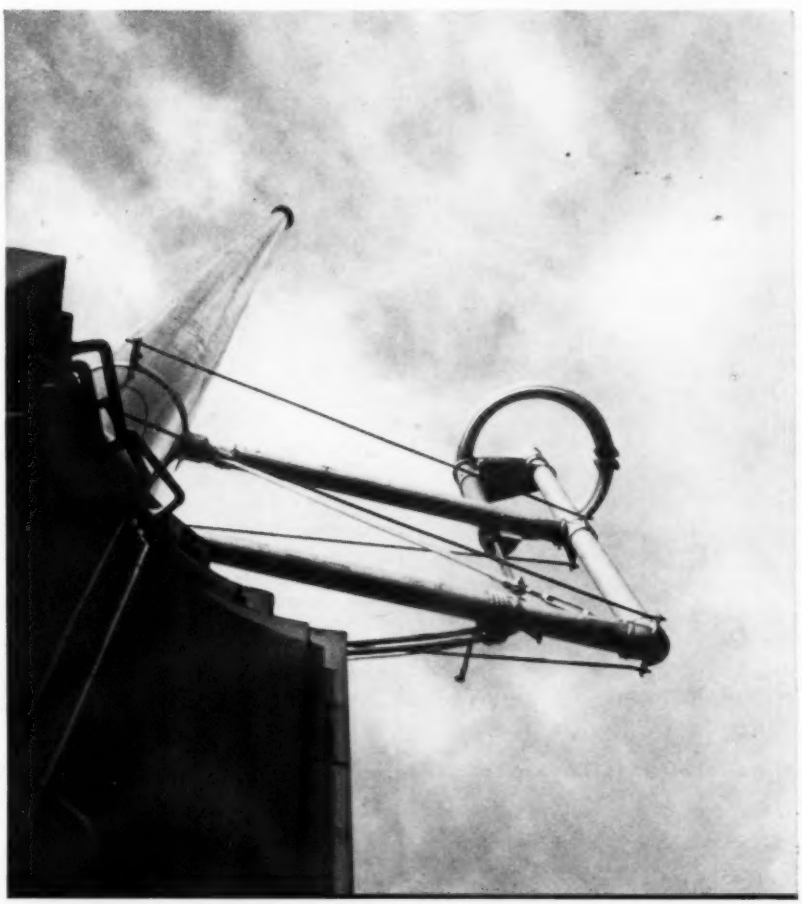
THE foundations of radio's expansion in this war were laid during World War I. Then, radio was known only as a new and relatively undeveloped means of communication, employing the simple dots and dashes of code. Only one section of the radio wave spectrum, long waves, was available. The spark method of transmission, requiring vast amounts of electrical power, was inefficient and wasteful, according to modern standards.

But men of science, working under the pressure of war just as they are today, labored over development of the vacuum tube and of new electrical circuits. They studied radio wave propagation, so that new sections of the spectrum could be opened for use. In 1919, radio was ready for its first great expansion.

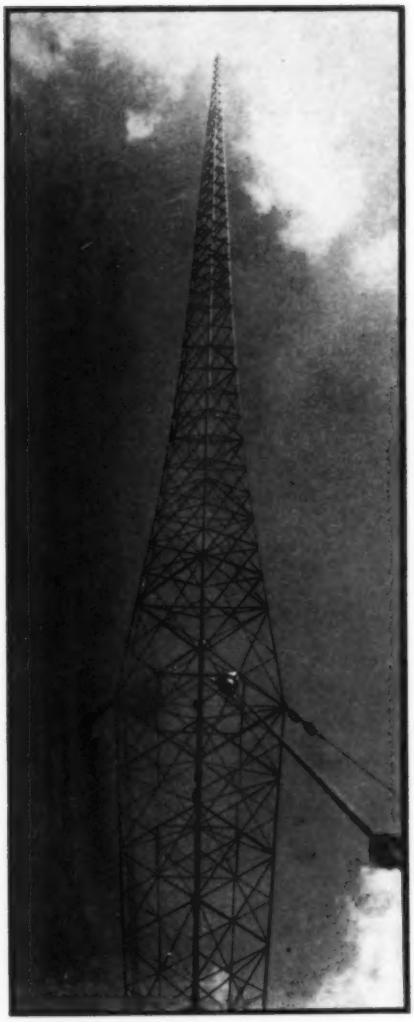
What was accomplished with radio in the two decades of peace that followed World War I is shown by what radio had to offer at the outbreak of World War II.

Immediately after the Japanese attack on Pearl Harbor, the American radio industry began converting from peace to war production, accomplishing the job in a few months.

It was well they did. Fortunate, too, was the fact that American industry had developed and expanded radio to a point unequalled by any other nation; for modern warfare, especially when fought on a vast global scale such as this one is, re-



Odd-looking omen to future business is this small, compact and inexpensive radio antenna set on a high building in the center of a population area. Post-war use of these antennas will bring radio transmission closer to the receivers, improve reception, widen the market for sets, give broadcasting greater versatility.



Reaching to the sky, this vast, expensive antenna is a current symbol of radio's era of development. It is expected to give way to small localized antennas in the coming era of radio's maturity.

quires a type of fast, flexible communication that only radio can supply.

War calls for stronger, sturdier, more dependable instruments than we use in peace-time, and it requires that we develop new devices and new services. We are meeting this demand today in our laboratories, our engineering workshops, and in our manufacturing plants.

War Speeds Scientific Development

Until the war is won, much of what is being done must remain a military secret. It can be said, however, that under the force of urgent necessity, we are making rapid advances in the development of new electronic tubes and in the design of radio circuits. New areas of the radio spectrum are being opened. Prior to Pearl Harbor, we had made a good start with ultra-short waves, measured in lengths of 10 meters or less, and were beginning to use microwaves of 40 to 60 centimeters in relay systems. It can be expected that research now being done will open for use wavelengths of 1 to 3 centimeters.

Post-War Radio

What, then, can be expected of radio in the post-war period? It is impossible, especially at present, to be exact in predicting what is to come. On the other hand, some of the possibilities can be indicated in general terms.

Broadcasting. New methods and new radio-electronic devices will greatly improve the quality of reception on broadcast frequencies.

There should be greater use in broadcasting of ultra-short waves. Because of the nature of these frequencies, it is possible to use modulation methods and systems which not only improve the quality of reception, but also reduce atmospheric and other noise.

Greater use of the ultra-short waves through continued expansion of frequency modulation and television will bring about, in the years to come, some readjustment in sound broadcasting. Sound broadcasting, however, will retain considerable importance even after television is established on a wide scale.

In the field of international short-wave broadcasting, we may look forward to a much higher degree of technical perfection. The time is coming when this type of broadcasting will have a quality comparable to the best in domestic broadcasting. Improvements are coming in both short-wave transmitting and receiving instruments. Moreover, we are rapidly accumulating new knowledge of the "space circuit," or the behavior of radio waves in the atmosphere.

International Communication. As in the case with international short-wave broadcasting, trans-oceanic point-to-point radiotelegraphy will be greatly enhanced. Improved circuits and electronic devices, together with the increased knowledge of "space circuits," will heighten efficiency and quality.

We may expect an added number of transmitting channels to become available, especially for code. For one thing, there should be a more efficient use of the available frequencies. More channels of information will be put into a given frequency space. Better directional and "steerable" antennas will improve both voice and code transmissions. More sensitive receiving devices will permit the use of less power.

Methods for transmitting large quantities of information, such as facsimile, possibly will find application on the international circuits.

Multiplex transmissions, automatic and error-proof printers, and voice and code "scrambling" devices, which will improve the secrecy of radio circuits, should come into greater use.

Marine radio will benefit much in the same manner as international communications.

Domestic Communications. On the domestic scene, there is the possibility of radio relay networks being established to carry from city to city the services of television, sound-broadcasting, high-speed facsimile, message printers, and other forms of communication in voice and of record. This development may occur in parallel with the growth of similar services by coaxial cable and by wave guides.

There should be an expansion of the use by aviation and the railroads of radio as an important aid to the movement and control of traffic. An example of a possible application in this line would be a "radio traffic chart," which would show, from moment to moment, the exact location of trains in motion on the ground or airplanes in the sky.

TWO YEARS OF FM

Broadcasting has always thrived on new ideas. What post-war radio may do for American industry may be gleaned from a two-year record of frequency modulation.

In two years, the number of stations grew from one to 45 regularly on the air, with a total of at least 125 signifying interest. Between 500,000 and 600,000 receivers were sold and placed in service. At present there are perhaps 40 million people who could be adequately covered with FM if the transmitters were available.

Aviation radio, already highly developed, will show vast improvement. Services of both voice and code communication will be more widely applied. Radio-electronic devices will aid navigation through the ability of a plane to locate itself automatically anywhere in flight. They will be used to guide and land planes blindly, and to avoid collisions in the air and on the ground. Television and television techniques will enable airplanes to "see" through fog.

In fact, we may expect radio to become, to an astounding degree, the "eyes," "voice," "ears," and "feelers," of all mobile craft.

A broad expansion of radio's services in the specialized fields of police and fire work, forestry and safety can be readily foreseen.

Studies of the space circuits traveled by radio signals, more sensitive receiving devices which require less transmitting power, ultrahigh frequencies and microwaves, radio facsimile and television—all should find extensive applications in the problems of community service.

The Micro-wave Region

Further development of radio in the micro-wave field will make available some services which now seem fantastic. These would include the possibility of a motorist, while traveling on a highway, dialing a telephone number and talking to home or office without stopping his car. Passengers on moving trains might have the same advantage. In the more distant future, enough wavelengths may be available to permit pedestrians to carry personal radiotelephones. It is probable that such services as these would tie into the regular wire-line systems through special radio stations located at intervals along streets and highways.

Non-communication Applications. In recent years, many of the principles of radio-electronics have been applied to fields other than communications. Radio tubes have been employed in electronic devices which detect, count, sort, measure, control, and perform many other tasks with infinitely greater precision and skill than it is possible for a human to do.

A most outstanding application of radio science to non-communication purposes is the electron microscope. This instrument, for many years a theoretical possibility and then a laboratory novelty, became a practical reality through research in electronic television.

Under the impetus of war, still another branch of radio is being brought forward with a rush. Radio Corporation of America engineers call it "radiothermics." It is a development which employs high-frequency radio waves to heat, glue, dry, case harden, anneal, rivet, weld, deactivate enzymes, and to perform other industrial and scientific processes that cannot be revealed now. Because high-frequency heating shortens production cycles, improves products, and enables processes once regarded as impractical, many industrial products and services of the future will be better and cheaper.

War also has stimulated the development and growth of the new field of industrial sound—an offspring of radio. Manufacturing plants, railroad yards, and airports in many parts of the country have installed comprehensive systems of sound reproduction, which speed up communication and the handling of traffic to a degree thought impossible a few years ago. They also are used to play music for employees, who find that this new service relieves fatigue and breaks the monotony of repetitive tasks. Industrial sound will have an important role in the post-war world.

I doubt that any other industry holds the challenge represented by the future of radio-electronics. The electron, smallest known bit of matter, is assumed to be one of the basic building blocks from which the ninety-two stable chemical elements are formed.

The industry accepts the challenge of the future; for radio is not simply an agency of communication. It is a gateway to progress.

RADIO STATIONS IN THE UNITED STATES

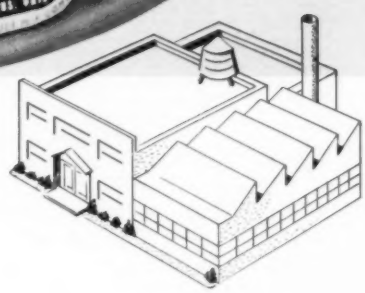
This list of stations which had been developed during peacetime gives a good indication of the many fields into which radio has expanded its usefulness, and give a hint to the greater fields to be developed after the war.

Alaskan Service	
Fixed Public	321
Experimental	2
Special Emergency	6
Aviation	112
Coastal	159
Subtotal	600
Aviation	
Aeronautical	438
Aeronautical fixed	210
Aircraft	2,140
Airport	75
Flying School	25
Subtotal	2,888
Broadcast	
Standard Broadcast	897
H-f Broadcast	69
Low-frequency Relay	229
High-frequency Relay	269
Developmental	8
Television	47
International	12
Facsimile	4
Studio Transmitter (S.T.)	4
Non-commercial Educational	5
Experimental	1
Subtotal	1,545
Coastal Service	
Marine Relay	37
Coastal Telegraph	52
Coastal Harbor	32
Coastal Telephone	4
Limited Gov't Service	3
Subtotal	128
Emergency Service	
Municipal Police	1,196
State Police	513
Zone Police	69
Interzone Police	30
Special Emergency	340
Forestry	807
Marine Fire	6
Subtotal	2,961
Experimental	
Class 1	216
Class 2	231
Class 3	1
Subtotal	448
Miscellaneous Service	
Geological	269
Motion Picture	12
Provisional	7
Mobile Press	4
Relay Press	7
Subtotal	299
Point-to-Point Telegraph	
Public	69
Press	3
Agriculture	7
Subtotal	79
Point-to-Point Telephone	
Public	15
Ship Service	5,214
Grand Total	14,177

* *Research Director, RCA Laboratories.*

Abridged from article that appeared under the title, "Radio and Its Post-War Prospects," in the March 1943 issue of "Electronics," founded by McGraw-Hill in 1930 as the pioneer publication in that field.

Wartime Products with a Peacetime Policy



Leading jobbers throughout the country are relying upon Conduit Pipe Products Company for the speed and efficiency so necessary in meeting today's wartime industrial and government needs. These jobbers also know that today as in peacetime, this company maintains its rigid policy of selling *only* through the legitimate wholesaler.

REPRESENTATIVES IN PRINCIPAL CITIES

Conduit

PIPE PRODUCTS CO.

COLUMBUS, OHIO

PIPE COUPLINGS PIPE NIPPLES ELBOWS, 90° AND 45°
RUNNING THREAD PIPE GOOSENECKS WALLPLATES

TELEVISION...

Speaking of Post War Selling

. . . will be ready to boost sales and profit volume — after World War II, just as Radio did after the first World War — and perhaps electrical wholesalers of this generation will not let such opportunity slip through their fingers

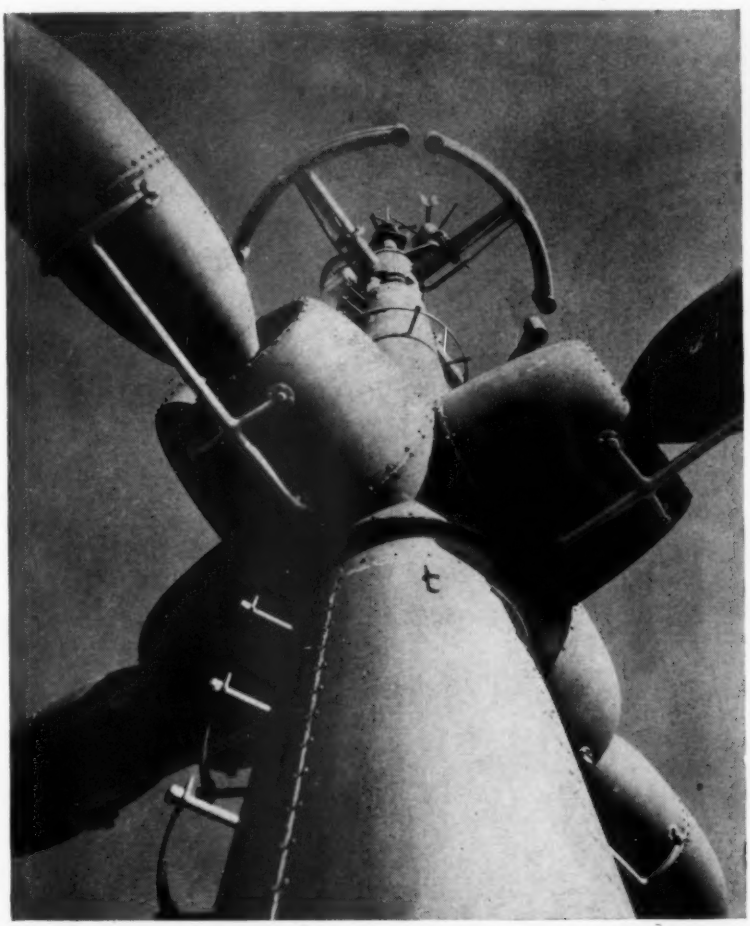
By Robert E. Shelby*

THE scientific concepts of television are not new as judged in relation to the pace of modern engineering developments, but it has been only within the last 15 years that rapid progress in the field of electronics has made possible the development of a television system adequate for a commercial service. During this period the electronics art and the television art have been extensively interlocked, many electronic developments having resulted directly or indirectly from the search for better television. Modern television is electronic television, and the electronics art in turn owes much to television.

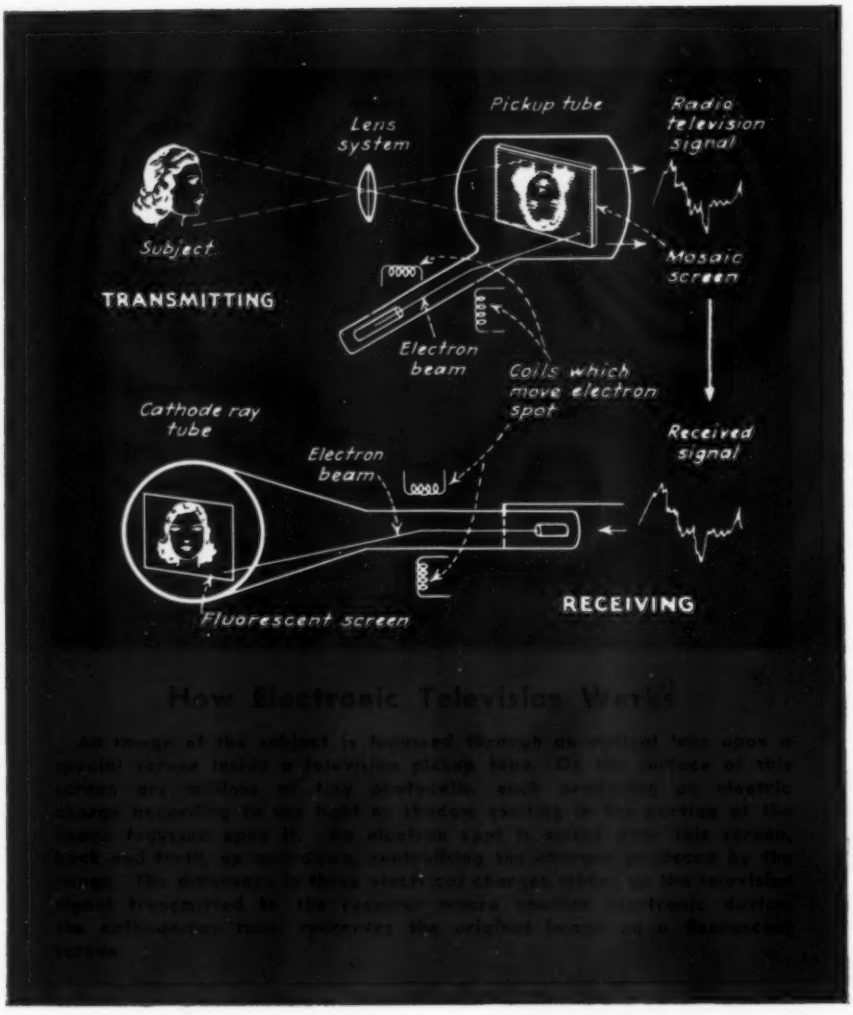
There seems to be little doubt that television broadcasting will advance at a rapid rate as soon as the war ends. Many of the principles discovered and the developments which were advanced in the progress of the television art are finding important application in the war effort.

In venturing predictions concerning the future of television, it is worthwhile to study the history of similar industries which are further advanced. We might, for example, compare the fields of television and motion pictures. We would then find that radio broadcasting is now at a stage in its development corresponding to that of the motion picture industry at the time of the public introduction of the talking movie about 1926, except that the changes in the two cases are reversed. In radio broadcasting, we are just now adding sight to sound, commercially, whereas in the motion picture industry in 1926, sound was just being added to sight, commercially. When we consider the fact that sight is unquestionably a more important human sense than sound, it seems reasonable to anticipate that this metamorphosis which is about to take place in broadcasting will be even mort important than the one which the motion picture industry went through in the years between 1926 and 1930.

In the development of both the motion picture and sound broadcasting industries, means had to be found for syndication of entertainment features. In the motion picture industry this was achieved by providing hundreds of duplicates of a single feature film and distributing them to the thousands of theatres through-



Gargantua of a new industry, this NBC television antenna atop New York's Empire State Building is the forerunner of many others across the country that should come when Peace permits full development of this new industry.



How Electronic Television Works

out the country. In sound broadcasting, syndication was first achieved by interconnecting broadcasting stations throughout the country by means of wire circuits so that a single program might be broadcast simultaneously by all stations so interconnected. In both cases, the tremendous advantage gained was the low program cost per unit of audience, making possible expenditures of large amounts on single entertainment features which would be out of the question economically without syndication. Unquestionably syndication will be required in television for the same reason, as well as for the reason that immediacy will be extremely important in many television programs just as it is in sound broadcasting.

The network interconnection of television broadcasting stations presents a new problem requiring special solution. In the case of sound broadcasting, network interconnection is possible by the use of facilities already in existence but, generally speaking, no such facilities which might be used for television network connection exist. A considerable amount of work has been done on this problem, however, and two technically satisfactory solutions have been found. One is transmission of television programs from station-to-station by means of special cables capable of transmitting the wide band of frequencies required by television signals. This method has been developed by the American Telephone and Telegraph Company and has been demonstrated by them on several occasions. An outstanding example of the use of such special facilities was the televising of the Republican National Convention by NBC in Philadelphia in the summer of 1940 and its transmission to New York by means of an experimental coaxial cable of the A.T. & T.

The other method of interconnecting television broadcasting stations for network operation is by means of radio relay circuits. Extensive experiments along these lines have been conducted by RCA Communications (RCAC) and facilities involving the use of three radio relay stations for the transmission of a television program over the NBC station in New York showed that this method would also solve the problem satisfactorily.

Lower Cost, Longer Pictures, Color, Stereo, all Post-war Possibilities

As regards post-war television receivers for the home, it is to be expected that prices will be lower than before the war. This will be due not only to the economies resulting from mass production but also to the adoption of production techniques and facilities developed for manufacturing special equipment for the war program. The projection-type reproducer seems likely to be widely used for all except the lowest-priced sets, since it has already been demonstrated successfully. It is to be expected that a single piece of furniture for the home providing television, sound broadcast reception (FM and all-wave AM), phonograph, and possibly facsimile, will make its appearance. Employing the projection principle, the better home television receivers will provide pictures ranging up to 2 or 3 feet in size.

Again paralleling the history of the motion picture industry, television probably will add reproduction in color as motion pictures in natural color have come as a refinement to motion pictures in monochrome. Whether these television pictures in natural color can be added in the existing wave bands provided for monochrome television, or will come as a new service in other radio channels, remains to be seen. Experimentation with color television has been actively under way for some time and was receiving increased attention when we entered the war.

Stereoscopic or apparent three-dimensional television pictures theoretically are possible and have been experimentally demonstrated — in natural color in at least one case. It now appears less likely that stereoscopic television will come into widespread use than that color television will be available. Again, we find here

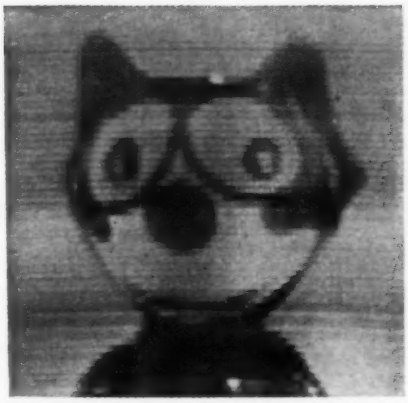
a parallel between the motion picture field and television. Stereoscopic motion pictures have been demonstrated spasmodically for a number of years. The need for special viewing equipment or restrictions as to position for the audience in both cases put the stereoscopic process at a distinct disadvantage and the amount of added realism, so far at least, does not appear to justify the effort. This situation might be summed up by stating that if there is a real demand for stereoscopic television it probably can be provided, using basic principles already known.

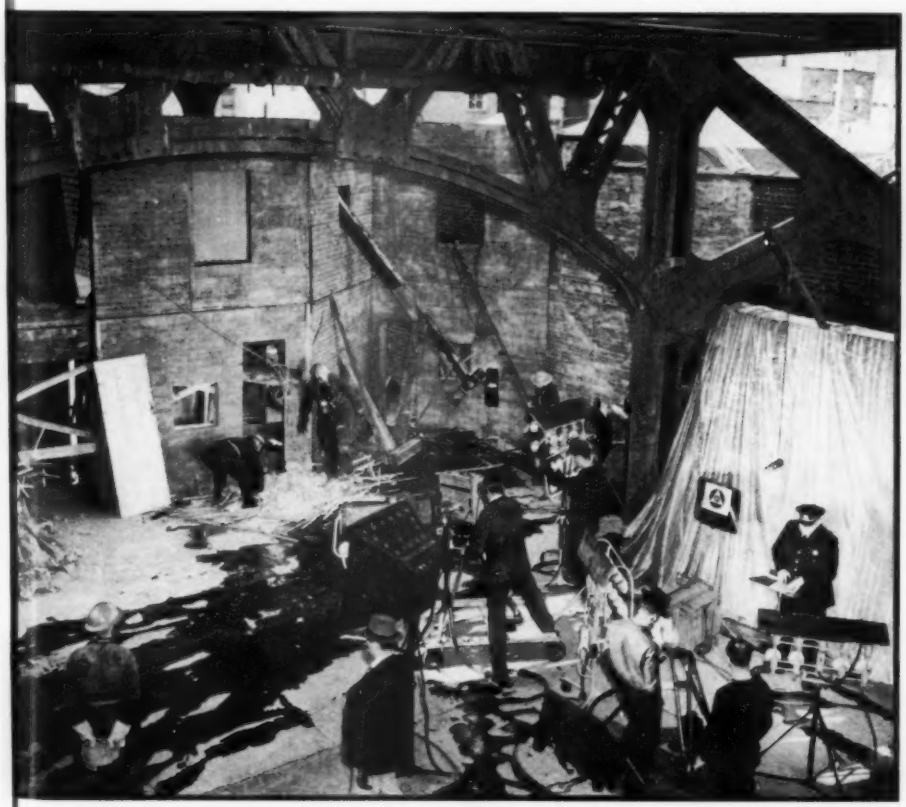
No discussion of television would be complete without consideration of the possibilities of theater television, as distinguished from television broadcasting for reception in the home. Equipment has been developed and demonstrated capable of projecting a satisfactory television picture on a 15 ft. x 20 ft. screen in a motion picture theater. Connection of theaters in a metropolitan area to a central distributing point either by means of special radio circuits or specially equalized telephone circuits (this has been demonstrated to be feasible for short distances) may be readily accomplished. This would appear to offer a supplementary service for motion picture theaters.

So far, we have considered only the entertainment and educational possibilities of a television broadcast service. Obviously, any medium for the transmission of sight intelligence practically instantaneously from one point to another over great distances offers many other attractive possibilities and television may find a wide variety of special applications. Remote supervisory monitoring of industrial operations, demonstrations of techniques to large groups in classroom and laboratory teaching, remote identification of persons or objects, etc., suggest themselves at once as possible uses for this powerful new tool.

** Development Engineer, National Broadcasting Company.*

Abridged from article that appeared under the same title in the March 1943 issue of "Electronics," founded by McGraw-Hill in 1930 as the pioneer publication in that field.





Progress in television quality is demonstrated graphically by these three pictures, above, which were taken directly from a television receiver screen. Early experiments used the 60-line screen of the top photo. Later developments used the 120-line screen of the middle picture, while the bottom photo shows today's standard 525-line screen.

Television goes to war, left, as the National Broadcasting Company uses an outdoor television pick-up to transmit a series of lessons for civilian defense personnel training.

Speaking of Post War Selling

SOUND Systems Will Sell

War-time uses, in hundreds of different ways, will stimulate peace-time buying and — electrical wholesalers have that inside track on where, when, and how to sell them

By F. D. Wilson*

THE electron tube can do more extraordinary things than any other device yet created by man. Its potentialities in the fields of industry, television, radio, medicine and many others are seemingly limitless. Billions of invisible electrons, racing through space inside vacuum tubes, are at the heart of one of industry's newest and most logical developments for speeding up production and human efficiency in both the war plant and the office—electronic intercommunication and paging systems.

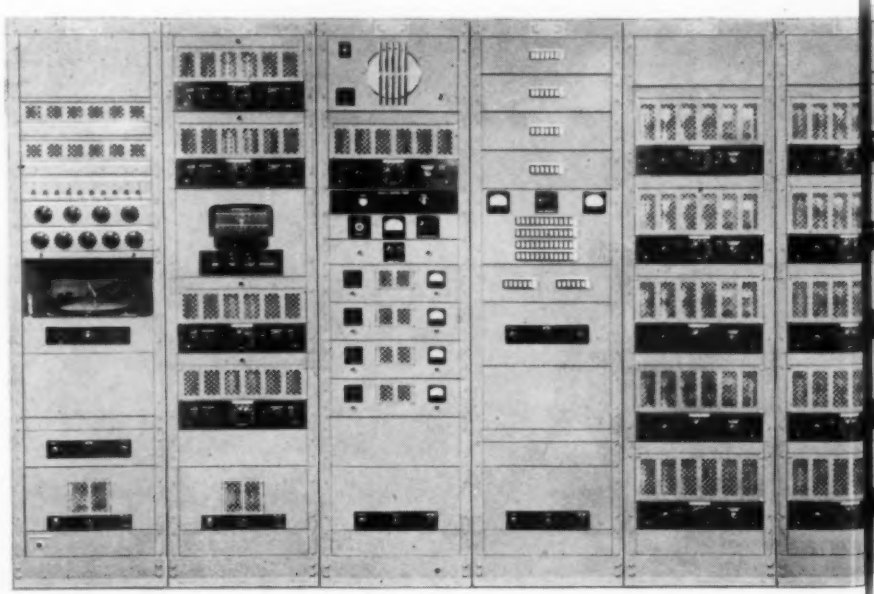
The "brain" of such a system is the amplifier rack and panel, where circuit priority is automatically determined and where the audio frequency impulse is received, filtered and clarified, increased in intensity and carried to any number of outlets —all in a split second. The "ear" of a paging system is the microphone —catching the slightest whisper and literally making it a command by passing it to the electronic "brain." The many "mouths" of a paging system consist of a large number and variety of loudspeakers and air-column horns, each engineered to its specific job and to its environment factors such as the noise in the area to be covered, acoustical factors, and specific functions required of the system. Loudspeakers may be mounted in the open or behind grilles . . . on ceiling, pillar, or wall . . . inside, or outside exposed to the weather.

In a vast aircraft engine plant designed for Wright Aeronautical Corporation, such a sound system conserves executive time, builds worker morale, speeds production of vital equipment for the men on the fighting front. This modern installation is used to broadcast voice, music, time signals and other information all over the enormous plant at any hour of the day or night.

Two separate equipment groups are used. The main system handles: (1) Fire signals, (2) Time signals, (3) Plant police calls, (4) Switchboard paging, (5) Maintenance calls, and (6) Local operation. Precedence is established in that order. For example, if the fire signal is sounded it automatically locks out any other service that is using the system. A smaller, supplementary system, is used to bring radio or phonograph music to five cafeterias.

The fire signal is a tone produced by electronic oscillation. From any fire box in the plant a signal can be sent over the entire system, cutting out any other service in use at the time. The signal is coded to indicate the location of the box originating the alarm. The time signal is used for stopping and starting work on each shift. The tone is different from the fire signal. When machines are in operation an automatic control doubles the volume of the signal to carry above the noise. Police service is maintained by the use of coded voice signals to the guards throughout the plant.

One microphone is in constant use for switchboard paging. There is such a large volume of calls to the plant that one girl is employed full time to handle telephone requests for paging. The plant telephone system has a dial number for paging



Sound for morale is becoming more important in industries working under the stress of war-time production quotas. Early installations proved that "music while you work" increases production. Two Westinghouse employees here are selecting records for the day.

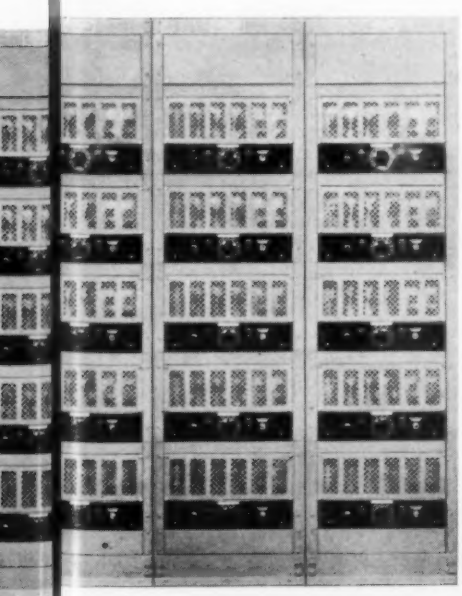
service and when this number is dialed the girl answering fills out a "Paging Requisition." She passes this form to another girl, who selects the proper key for paging the area to be covered. Paging is done over five different circuits. Five different areas can be paged separately or in various combinations. A master key cuts in all five circuits at once.

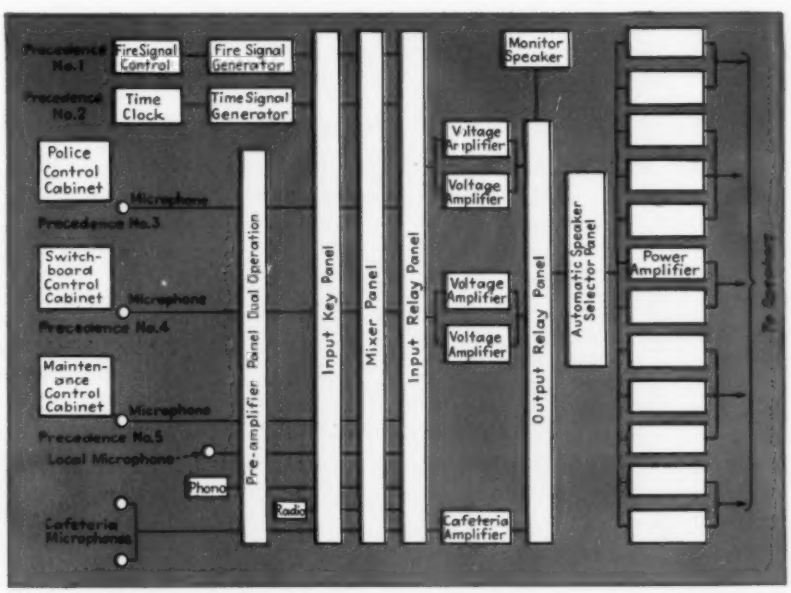
The plant's Chief of Maintenance is provided with a panel similar to that in the office of the Chief of Plant Police. If a machine should break down, or other trouble develop, the maintenance crew can be summoned and instructions instantly given over the voice paging system.

For local operation, announcements can be made direct from the amplifier panel and rack in the control room. Executives may issue instructions or make addresses to the entire factory personnel by plugging in the microphone at the control panel. Radio programs, or phonograph music, can be sent into the entire plant, or to any part of it.

Dual equipment is installed and so wired that the failure of any vital part of the sound system automatically switches a reserve unit into the circuit.

The use of sound amplification equipment for advertising purposes





Factory sound system in the plant of the Wright Aeronautical Company performs many functions. It furnishes entertainment, permits paging, may be used for intercommunication between specific points, transmits time signals, handles maintenance, fire and private police calls. Above, layout of the sound system equipment and, left, photo of the central control panel.

Timely tips from the Wartime Lighting Front

Salesgram

BOB BISHOP
SALES MANAGER

SYLVANIA ELECTRIC PRODUCTS INC.
Salem, Mass.

Incandescent Lamps
Fluorescent Lamps
Fixtures, Accessories
Radio Tubes
Electronic Devices

WHAT'S THE INDUSTRIAL LIGHTING OUTLOOK FOR THE REST OF '43? F. W. Dodge estimates look mighty good. Non-residential building from April through December will run around $1,500,000,000 -- $500 MILLION a quarter. Sure, war building is declining, but 1943 will still beat a boom year, 1940. Real business for those who go out and get it.

SYLVANIA'S "FIXTURE OF THE FUTURE" is what the trade has been waiting for. One industrial fixture that is completely adaptable. Single or continuous row mounting. Any type of hanging. Simplifies installation and maintenance as well as stocking. Watch for announcement soon.

WPB DECENTRALIZATION is expected to speed issuance of PD-1A's. Soon we'll be submitting applications to local regional boards instead of Washington. Present ceiling (lighting expenditures not more than $100) will be lifted until regional offices pass on at least 80 per cent of all PD-1A's.

WPB LIMITATION ORDER 1-28 (as amended March 30, 1943) pegs exact amount of incandescent and fluorescent lamps to be produced by each manufacturer in a given period. SYLVANIA received green light to furnish fluorescent lamps WITH OR WITHOUT PRIORITY RATING. But majority incandescent purchases must carry AA-5 priority or better. Caution: limit orders wherever possible to AA-5 priorities or better.

WATCH FOR A NEW FLUORESCENT STARTER. Soon SYLVANIA will announce glow-type fluorescent starter. Advanced design. Positive starting. maximum lamp life. Also a new cut-out-type starter is coming in the wartime line.

HELP AMERICA TRANSPORT THE STUFF OF VICTORY by conserving vital transportation. Delivery time that normally took one week now takes two and even three. Accordingly, plan and order your stocks as far in advance as possible.

SPECIAL FOR INDUSTRIAL ACCOUNTS. By popular demand, SYLVANIA, in May, goes into volume production on its fluorescent HANDYLITE. Boon to war plants. Glareless illumination from cool source for close inspections. Portable. Readily hookable. Light without shadows, for hard-to-get-at places.

* * *

We'll be looking forward to seeing you at the NEWA convention in Buffalo.

R. H. Bishop

came into prominence during the 1930's and it was considered almost an advertising necessity by many large companies. One such concern, Servel, had 150 tow cars and trailers, all equipped with sound. Salesmen driving the cars used microphones to publicize refrigerators and other home appliances, made mass demonstrations at fairs. Another company hired the Goodyear Airship "Puritan", which hovered at 1200 ft. over a Miami theatre during the showing of "Lost Horizon," while horns sold the story being shown, from the air.

Conventional Outdoor Uses

Many people have seen and heard police "safety cars," but few realize their full worth. The Niagara Falls police department, for instance, has two such cars, each with a large all-weather horn mounted on the top. The cars are used to educate not only residents of the city but also the thousands of tourists who visit it regarding traffic regulations. The cars have also proven indispensable in emergencies such as large fires and other unusual events where crowd control is necessary.

It would be almost impossible to hold many large affairs drawing tremendous crowds of people without the use of sound systems. Football crowds are kept advised of scores, plays, yardage, players' names and substitutions. In such famous football bowls as Northwestern University's Dyche Stadium and Rockne Stadium at Notre Dame, sound systems carry the spoken word to thousands of "fans."

The famous Easter Sunrise Service at Miami Beach, held on the water front, has atracted crowds estimated at 35,000. Such a gathering covers a considerable acreage and twelve large, well-placed speakers make the entire ceremony audible to everyone.

Amusement parks too, have found outdoor types of sound installations very useful. On many large public projects, such as Boulder Dam and the San Francisco-Oakland Toll Bridge Plaza, operations are controlled from a central position. The National Air Races in 1930 were held at Glenview Airport in Illinois and even at that early date throngs spread over a vast area were advised of events and winners by means of sound. An installation at Bendix Field in Indiana is used for both paging and intercommunication. From the microphone in the control tower messages can be switched to any remote connection.

Other Typical Uses

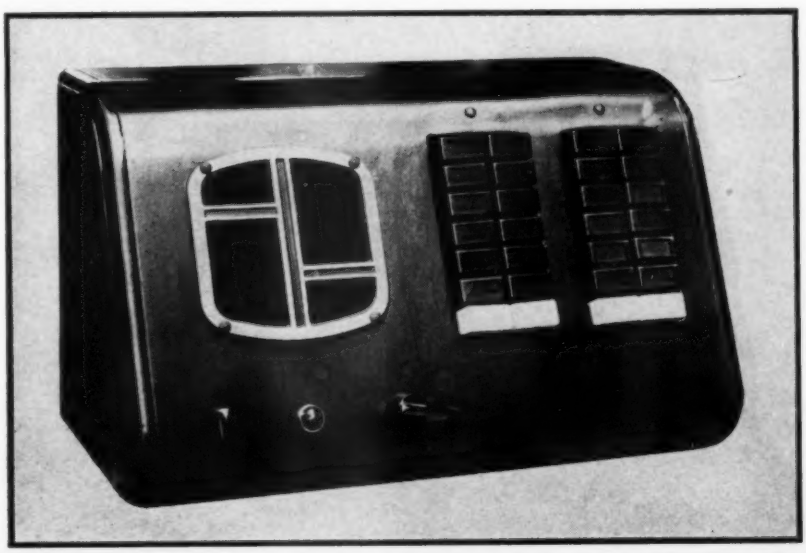
For direct personal communication between executives, department heads, and secretarial assistants, more or less "packaged" intercommunication systems are offered to modern business. Relatively simple installations involving compact units provide instant contact between the key personnel of any organization. Information is obtained from any department while holding the long distance telephone, relieving telephone blockade. A conference can be held with several members of the organization, each with their data in front of them, at their own desk. A secretary or subordinate may be called, and may answer from any point in the room without interrupting his work.

School intercommunication systems attained great popularity before the war changed many things. In a typical installation a small remote control unit is placed on or near the superintendent's desk and the superintendent uses it to reach every room singly, or the school in its entirety. He can send radio rebroadcasts wherever he wants them in the school, can listen in on school activities, receive reports from the teachers, and can in some instances be called by the individual class rooms. The amplifier itself is installed in a closet or, possibly, down in the basement.

A most unusual intercommunication system was installed a few years ago by a newspaper. In the office of the Minneapolis Star, a microphone, pre-amplifier and a phonograph turntable were connected through a master central unit. Telephone wires throughout the city connected with 45 outlying "carrier" depots. These depots, small metal houses where the distributors get their papers, have speaker units installed in each of them. When the kids go for their papers in midafternoon, data is received at their depots over the system on new "deals" for obtaining subscribers. They hear pep-talks, information on new subscription contests, the latest news. Depot station circulation managers are able to report back to headquarters promptly and reporters have often sent news in much quicker than by ordinary telephone.

As to the future, the development and use of unusual electronic equipment for military purposes in war will certainly bring new advances in peace. The sound equipment business will undoubtedly benefit to a considerable extent from certain phases of current design work, particularly with respect to ruggedness of equipment.

Package jobs are easily sold, easily installed. Intercommunicator units of this type, used in groups, find many applications in business.



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* *Operadio Manufacturing Company.*

Abridged from article that appeared under the title, "Sound and Its Place in the Sun," in the March 1943 issue of "Electronics," founded by McGraw-Hill in 1930 as the pioneer publication in that field.

Electronics—Promise of To-morrow

A new industry that offers gigantic sales potentials to electrical wholesalers who will prepare and train their organizations for intelligent selling and warehousing of its thousands of new products

By W. C. White*

THE science of electronics is at present enjoying merited publicity. Much of this publicity revolves around the virtual certainty and some of it around the mere supposition that technical developments which are helping to win the war will have immediate practical peacetime applications.

While wartime innovations must naturally be kept in mind when attempting to peer into the future it is also true that unless other factors are also considered conclusions may be more apparent than real.

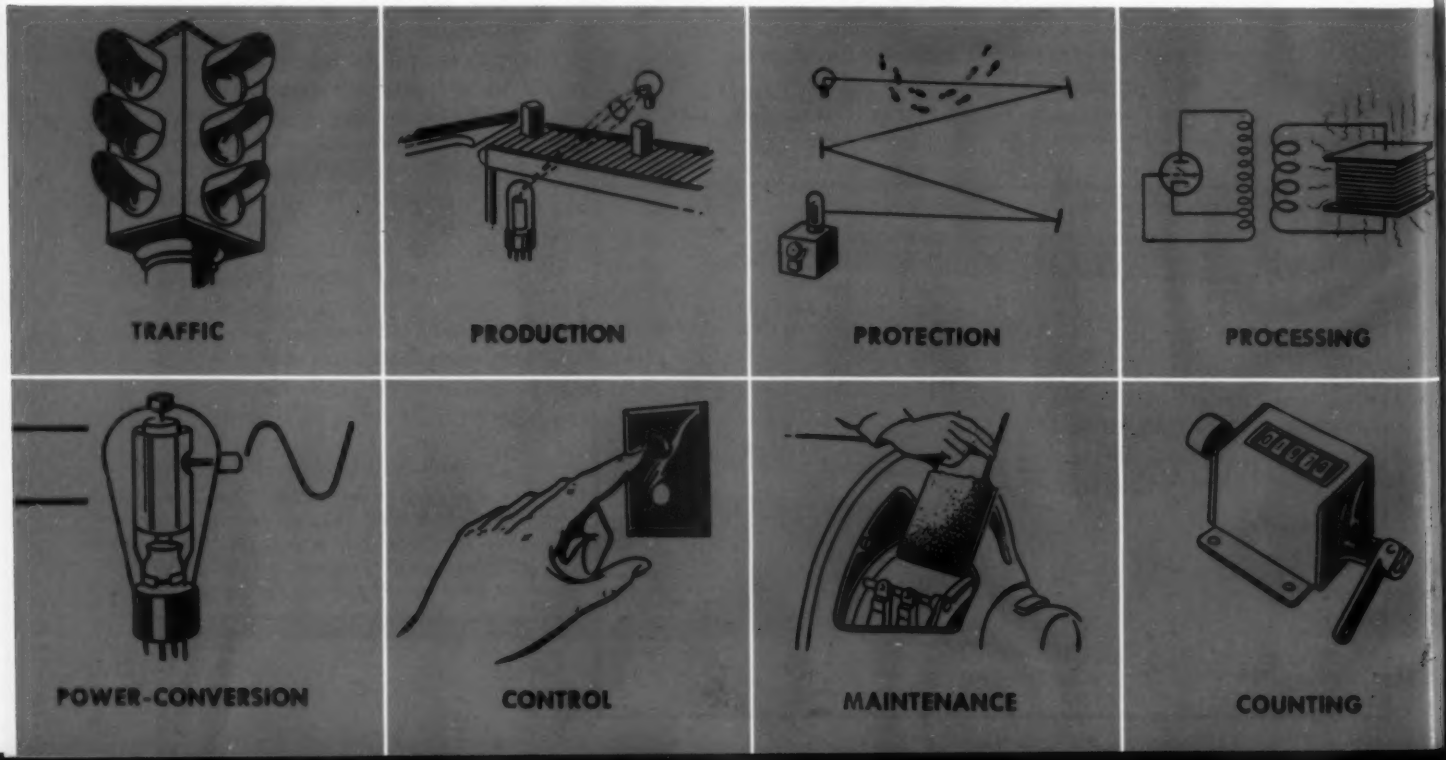
Electronics has gone through certain definite phases. Up to the time of World War I, it was an activity of scientific interest to just a few research groups. During that war it acquired a practical status which, a few years later, broadcasting transformed into a vast commercial undertaking. Shortly thereafter, applications for vacuum tubes other than communications were initiated but, in general, the reaction was unfavorable in this "first period of glamour." Fragile little radio tubes were not suitable for the rigid requirements of industry.

Then along came the late 20's, when it was again freely predicted that electron tubes would do all sorts of wonderful things. During the depression years some progress actually was made in commercially applying electronics in fields outside of radio. This was because any new thing at that time had to prove itself of real value to be accepted by hard-pressed industry and electronics did this in a certain few definite cases.

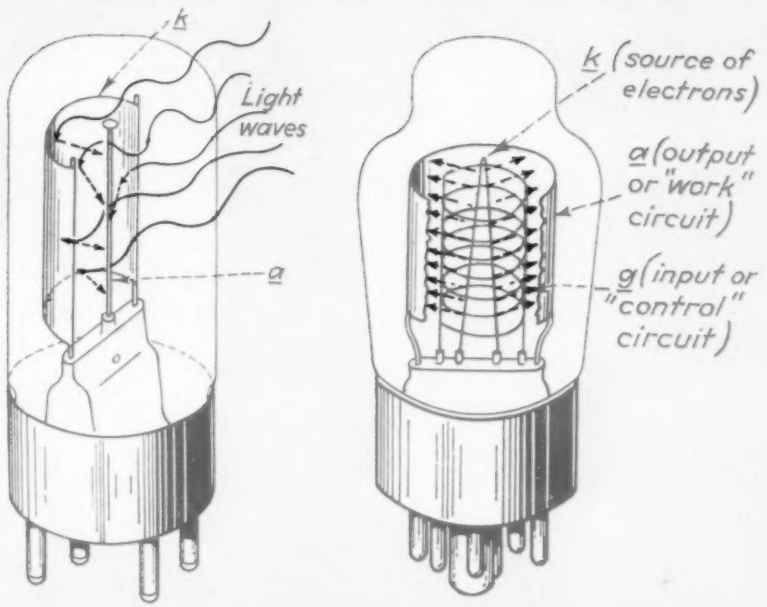
World War II has brought the second glamorous stage. In times like the present, when only technical accomplishments count and not the cost or economic soundness of the application, one is apt to forget these latter factors. However, in a peacetime future, these factors may rule out many beautiful electronic schemes that recently have been publicized.

There has also been a tendency of late in publicity to capitalize on the

Many important roles in industry are already being handled by the electron tube—controlling processes, increasing the safety of plant and personnel, stepping up the rate of production. Peacetime industry should see these uses and new ones expanded. Particularly important will be the developments which are currently military secrets.



The Electron Tube—Heart of a New Industry



Left. the phototube in which the sensitivity of cathode *k* to varying intensities of light serves to control the flow of electron between *k* and anode *a*.

Right, the elemental triode which has broad usefulness. The inertia-less electrons emitted by cathode *k* may be caused to flow to anode *a* with almost no time loss. Uni-directional flow phenomena permit functions such as "rectification" and "detection." Equally important, an additional structural element such as grid *g*, interposed between cathode *k* and anode *a*, may be used to increase or decrease the electron flow. Thus a small amount of power applied at grid *g* controls a large amount of power in the anode or "work" circuit. This phenomena facilitates amplification. It is also possible to change amplification to "oscillation," thus turning the tube into a generator of electricity.

fact that all matter and energy under modern physical concepts is related to the electron. However, the engineer working directly on electron tubes and their applications confines his attention to free electrons which are electrons that he can do something about; in other words, electrons in a vacuum tube. This imposes some very definite application limitations.

Fortunately, real progress was made not only in the difficult years of the depression but has continued right up to the present war period. This progress will be maintained and bear fruit. Just as, in 1917 and 1918, wartime radio laid the foundation for broadcasting and many of its by-products, the present war is laying a firm technical foundation for other new applications to contribute to post-war times.

The future is not predictable in detail but the general trend does seem reasonably clear. This trend may be grouped under three headings:

(1) Commercialization of old ideas that had made but little progress up to the outbreak of the present war.

(2) Application of war-inspired technical developments as improvements for old technique.

(3) Radically new electronic devices and application.

It is obviously impossible to discuss all applications with promise here but the following highlights will serve as a broad guide.

Expansion of Applications

Power Conversion. Rectifiers for outputs between a few hundred watts and a few hundred kilowatts have enjoyed wide recognition and use abroad for a considerable number of years. However, in this country they have made relatively little progress in competition against rotating equipment. The reasons for this are somewhat difficult to explain but probably could be best summed up by the statement that conditions differ somewhat and that our electrical engineers have not been "rectifier minded."

There is a very definite indication that this situation is now changing. This is partly due to the fact that rectifiers in large sizes can now be obtained on somewhat lower priorities and better deliveries than rotating equipment. It is believed, therefore, that the tide has turned in this country and that rectifiers will be more widely used for this class of service. Thyratrons will probably be used for the lower powers and sealed, steel-envelope ignitrons for the range up to several hundred kilowatts. The economics of such rectifiers is now on a sound basis.

High-frequency Heating. Heating equipment using electron tubes as power generators has in the past enjoyed only limited application. Tube-equipped heating machines have been used largely in the manufacture of electron tubes themselves. In this case, heating in an electro-magnetic field was employed. Application of high-frequency heating in an electrostatic field was limited almost entirely to therapeutic apparatus of the so-called "fever machine" type.

The advantages of high-frequency heating equipment of both types using, electron tubes, are now being more generally appreciated. Surface hardening of small steel parts has introduced the subject into the in-

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dustrial field, where it will undoubtedly spread to other applications as it becomes better known and understood.

Heat generated by high frequency equipment is usually expensive heat. This probably means that it will be used in peacetime chiefly where the dollar value of the material to be heated is high per unit of weight or volume. The fact that high-frequency heating can be made selective, so that there is heating of only certain portions or materials of the body in the high-frequency field is also an important factor, the value of which will come to be more generally recognized and utilized. Then, too, certain industrial processes may be effectively handled only by means of high frequency heating.

Motor Control. For a number of industrial applications requiring small electric motors, the d-c motor still has certain desirable characteristics that cannot be duplicated with any type of a-c motor. This is particularly true for certain light machine-tool applications. On the other hand, a-c distribution systems are becoming more universally employed, so that the localities where small d-c motors can be directly utilized are very limited.

The electron tube steps in as an almost perfect solution to this problem. It provides variable voltage d-c from constant potential alternating current. Thus a relatively small piece of additional equipment allows standard d-c motors to be operated with a wide variety of control and automatic features directly from standard voltage a-c distribution lines. Such electronic motor control equipment even provides characteristics not readily obtainable from a straight d-c supply. Tubes have a bright future in this important application.

A-C Contactors. For the past few years, ignitrons have enjoyed rapidly expanding use in the resistance welding field, where they serve as silent, high-speed a-c switches or contactors free from moving parts and mechanical wear.

As their characteristics and uses become better understood ignitrons will also be employed as a-c contactors, such as controls for electric furnaces.

Continuous Control. In many cases where there is automatic control of electrical equipment the controlling device at intervals switches the power on and off, at full potential, in order that the average over a period of time may be some desired value. This is particularly the case in electric heating. Continuous control is highly desirable for certain applications formerly requiring the use of rheostats or regulators, with their attendant complications. Thyratrons and ignitrons lend themselves well to continuous control due to their ability to be phase controlled cycle by cycle. They should, therefore, have wider application.

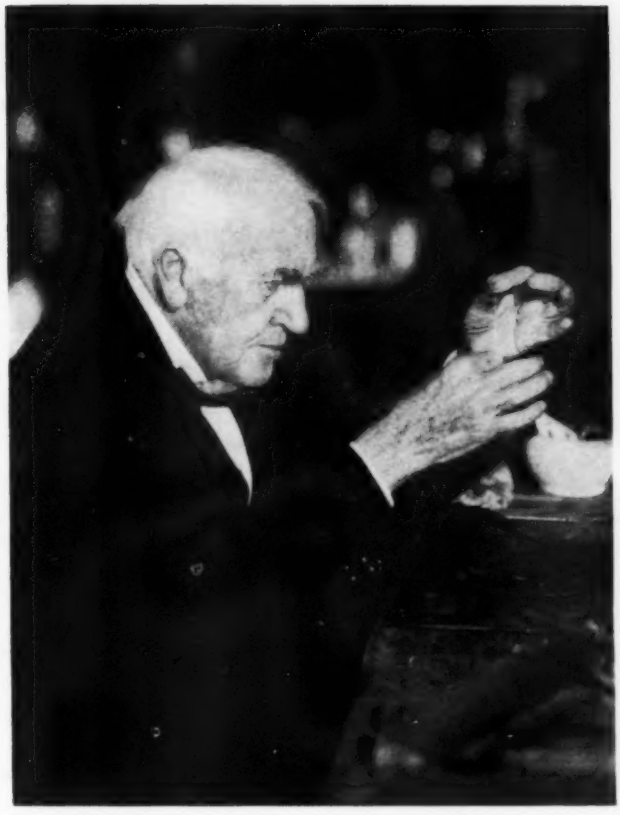
Radio. Greater use of the uhf regions is a foregone conclusion. The war has greatly increased our knowledge of how to generate, control and receive these frequencies. Many improvements in television and in FM broadcasting will result.

Use of uhf transceivers, much like the "walkie-talkies," for personal uses is easily possible, for example in camps, between boats and vehicles and to fixed points from these units.

Improvement of Technique

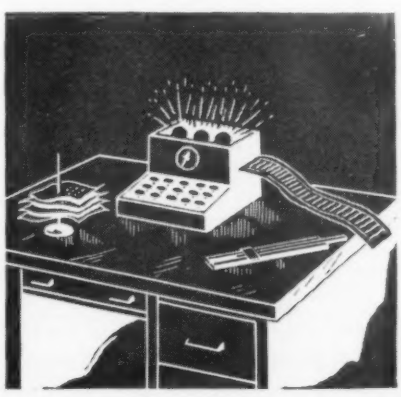
Uses for UHF. The outstanding improvements in technique in the past two years have frequently involved practical utilization of ultra-high frequencies. There are still several octaves in the gap between what was recently called the very short waves and the infra-red region. However, more rapid progress has been made in closing this gap, as regards practical utilization, in the past two years than in the previous ten years. This progress has not only resulted in prac-

FATHER OF ELECTRONICS



Researches in the perfection of the incandescent lamp in 1883, led Thomas Edison to observe the rectifying properties of the simple two-element tube. This year marks the sixtieth anniversary of the "Edison effect" which was followed by an extremely active program of electronics research.

BUSINESS



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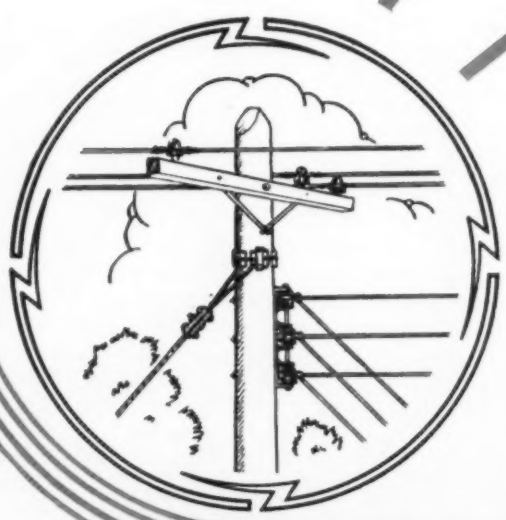

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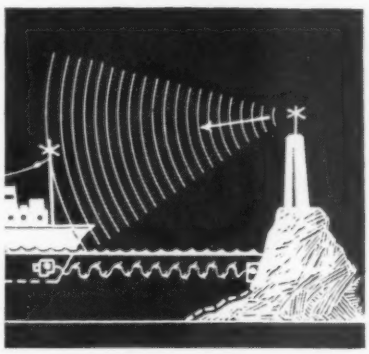
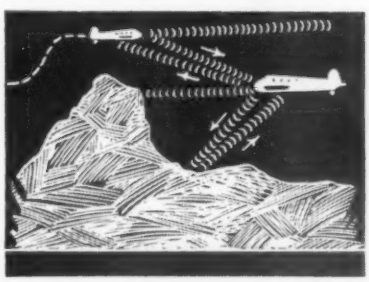
tical use of these much higher frequencies but in continual increases in the amount of power that can be generated and utilized.

Looked at broadly, these frequencies are chiefly valuable because they utilize much smaller radiating and receiving structures; they can be more easily utilized in the form of narrow beams and they permit a vastly increased number of available channels. Looked at in another way, these factors can also be expressed by saying that these ultrahigh frequencies have more of the properties of light than the long radio waves. For certain applications, their use has many of the advantages of light without certain of the disadvantages. High frequencies may be generated and received with relatively compact units and lend themselves readily to use with reflectors and refractors.

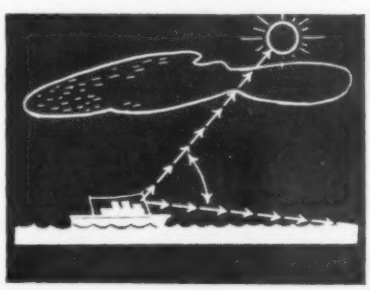
NAVIGATION



Lightless Lighthouse



Anti-Collision System



Blind Bearings

High-frequency beams will also travel farther and can be sent along conductors and around corners to a greater extent than light.

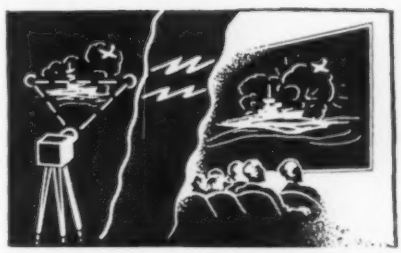
Engineers now working with extremely high frequencies are in an entirely new environment. They find themselves in much the same situation as Edison must have been in during his development of the electric light. Not only did Edison have to develop the incandescent lamp itself, but he had to develop generators, engines to drive them, governors, regulators, switchboard instruments, circuit breakers, and other items for the generating station. In addition, he had to develop and perfect distribution systems and all of the items that go into the premises of the user, such as sockets, switches, fuses and other wiring devices. In other words, he had to develop practically a whole new system. This same thing is true with the very high frequencies. Every element in the system has to be designed virtually from scratch. To transmit power even a few feet requires specialized engineering knowledge.

UHF vs Light. In many ways, as has been pointed out, ultrahigh frequencies behave like sound and light and, therefore, acoustical and optical concepts are often very helpful in understanding ultrahigh-frequency phenomena. In a like way, therefore, it is reasonable to assume that some of the uses of ultrahigh frequencies will be along the lines of applications that now utilize optical phenomena. The obvious ones, of course, are in connection with navigation, where optical instruments have been commonly employed. In cases of this sort, it is reasonable to suppose that an ultra-high-frequency transmitter, a beam radiator, and a receiver incorporating an amplifier may take the place of the sun, mirrors, lenses, and the human eye, enhanced by a field glass or telescope. In other words, we could have the electronic equivalent of a telescope with cross hairs. We could use an electronic method equivalent to sighting on an object to determine its angular relation to some point of reference.

Over the past few years, light beams employed in conjunction with photoelectric relays have enjoyed an increased usefulness in industry. In a similar way, uhf beams may well find some applications in industry somewhat along the lines of photoelectric relays but applied where light will not function due to the fact that it will not go through certain materials or will not readily carry a sufficient distance. It must also be remembered that when employing light we can utilize only a few colors for selective purposes, whereas in the high frequency radio spectrum tuning methods permit the use of a tremendous number of non-interfering wavelengths.

ENTERTAINMENT

Talking Book



Television Movies

UHF Relaying. Ultrahigh frequencies will undoubtedly be used to an increasing extent in connection with broadcasting and television, for the relaying of programs between studio and transmitter as well as from city to city to accomplish chain broadcasting.

UHF-Trained Manpower. Tens of thousands of men who have joined the military services or are in Government employ are acquiring knowledge and experience on electron tubes and electronic devices at ultrahigh frequencies. These men cover the whole field. At one extreme are highly skilled scientists, both theoretical and experimental, who are becoming interested in some phase of the subject. At the other end of the scale are relatively unskilled men who are now being taught the maintenance equipment. In between these extremes are many

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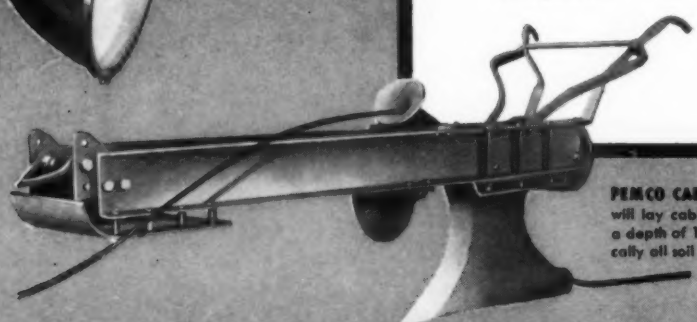

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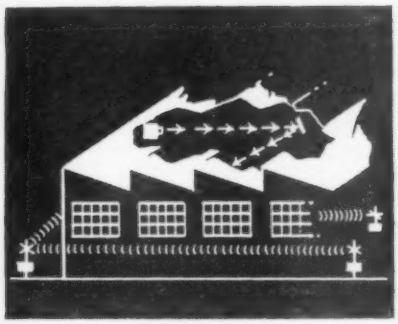
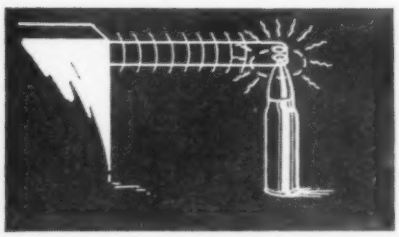
other classifications involving both technically trained men and non-technically trained men.

It is possible that at the end of the war a situation may arise which is quite unusual. In the past, when men have returned from military service they have almost always had to adapt themselves to new occupations and new devices and machines. This has meant that these returning men were at a disadvantage in comparison to the men who stayed behind in re-establishing themselves. Perhaps the situation will be reversed in this case and these thousands of men with knowledge and skill along UHF electronic lines will return home with up-to-the-minute knowledge so that those who remained at home in industry will be at a relative disadvantage and will have much to learn to keep abreast in the electronic field.

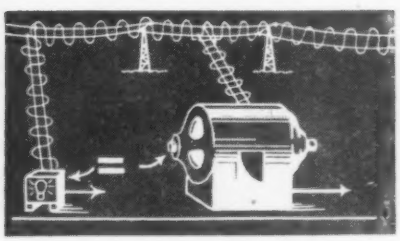
INDUSTRY



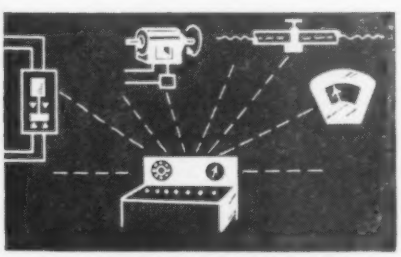
Protection



High Frequency Heat



Power Conversion



Remote Control

Radically New Applications

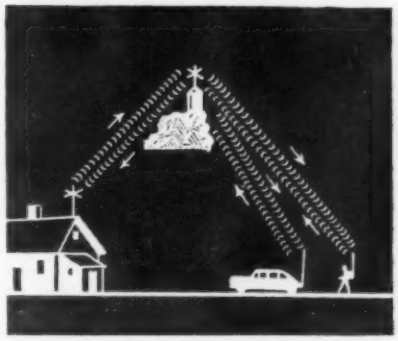
C-R Tubes. The points that have been raised in connection with the use of ultra high frequencies bring to mind the principle that whenever work has been done in science to make something many times smaller, bigger, faster, slower, heavier or lighter than previous accomplishments, then a host of new opportunities are opened up for research and utilization. Recent work inspired by the war has done this very thing by increasing the range and availability of the very high frequencies and, therefore, it is certain that we can expect some radically new applications.

This is a field, however, in which it is inadvisable to be definite. By really new applications is meant something like broadcasting, which introduced major changes into every-day living. It appears reasonable to believe that the cathode-ray tube may form a nucleus for some new and unforseen developments, probably in connection with the ultrahigh frequencies. At best, however, these will probably come slowly at the start.

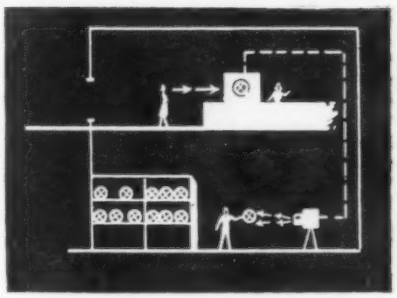
Electronic Calculators. In the past few years, personal living as well as business procedures seem to have become involved in a multitude of new uses of printed forms, tabulations, and miscellaneous paper work. The time is ripe for machinery and appliances to simplify this expansion in the requirements for routine hand work. One can be very sure that once this subject is successfully attacked for one application, its use will spread rapidly and it is also almost certain that electron tubes and their circuits will be somewhere in the picture.

Other Possibilities. The routine clerical details attending such simple procedures as a purchase in a department store, the buying of a railroad ticket, the sorting and distribution of mail, and payroll accounting, as well as a host of other routine clerical operations, will readily come to mind. The routine drudgery and exasperating delays associated with such procedures are certain to be a great stimulus to their simplification, minimizing, or elimination. The principle of scanning that is used in television may very well find application in some other field such, for instance, as photoelectric methods to enable the blind to read a printed page. Industry as well as the entertainment field may obviously use television principles.

COMMUNICATION



Personal Portables



Pictures by Wire

The important thing to be kept in mind in all of our plans for the future is the stern necessity of having each electronic development economically sound from a fundamental viewpoint.

New devices must be pieces of equipment that people are willing to buy and to use on the basis of what they will do better or faster or easier or cheaper than non-electronic equipment. No amount of "glamour" will cover up or take the place of these two fundamentals.

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* *Electronics Laboratory, General Electric Company.*

Abridged from article that appeared under the same title in the March 1943 issue of "Electronics," founded by McGraw-Hill in 1930 as the pioneer publication in that field.

Speaking of Post War Selling

By Paul M. Farmer*

Electronic Protection of Property A Mass Market in the Making

From huge production plants, power houses, water works, docks, railroad yards, institutions, down to department stores, commercial establishments, estates, residences, even chicken coops, electronic devices will be in demand for protection against intruders

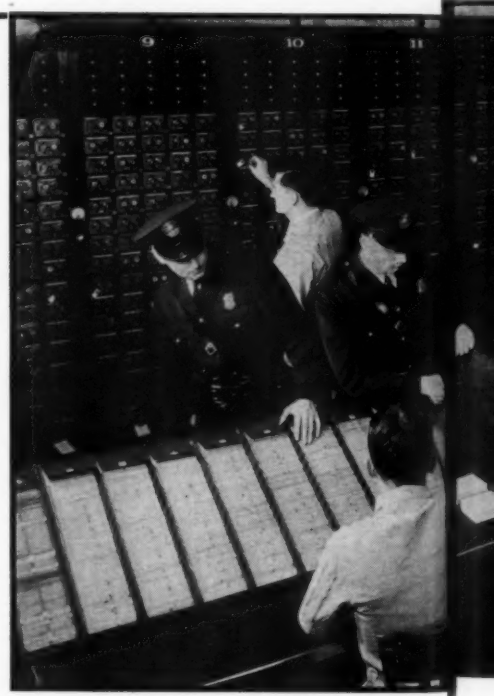
IN the field of protection, electronics is assuming an important role in guarding industrial plants and other properties against intrusion, burglary and various acts that might lead to sabotage. The systems used for this purpose are of two types: photoelectric, in which the detecting medium is a beam of invisible light; and body capacity, which depends upon the change produced when a person or other object enters an electric field.

Much of the pioneering in these types of systems has been done by the so-called "central station" protective companies, firms which, during the past ten years, have installed and operated in connection with their central station protection services thousands of photoelectric alarm systems for both indoor and outdoor protection. Up to the beginning of the war such companies installed body capacity alarms chiefly for the protection of safes and metal cabinets, but with the demand for increased protection for war plants these systems also have been developed for the protection of open areas, both indoors and out.

The photoelectric system, usually called the "invisible ray" alarm, was originally employed as an indoor burglary trap, an alarm being caused when an intruder intercepted the invisible beam of light. This system supplemented conventional protection of screens, foils and contacts. The demand quickly arose, however, for its use outdoors over comparatively long distances, and systems soon were developed to meet these requirements. One of the earliest outdoor installations was for the protection of a waterfront stretch of nearly 3000 feet over the water to guard against intrusion from the sea. This required mounting the projecting and receiving devices on tidal floats and the use of specially designed equipment throughout. The long-distance systems developed later were a modification of this system.

Several photoelectric systems have been approved by Underwriters' Laboratories for protection of inaccessible openings, ceilings, floors and party walls eliminating the need for other types of protection usually difficult or expensive to install. To obtain certification of the alarm system for reduced insurance rates the Underwriters require that a network of invisible rays be reflected back and forth inside the premises so as to subdivide floor space into at least five approximately equal areas.

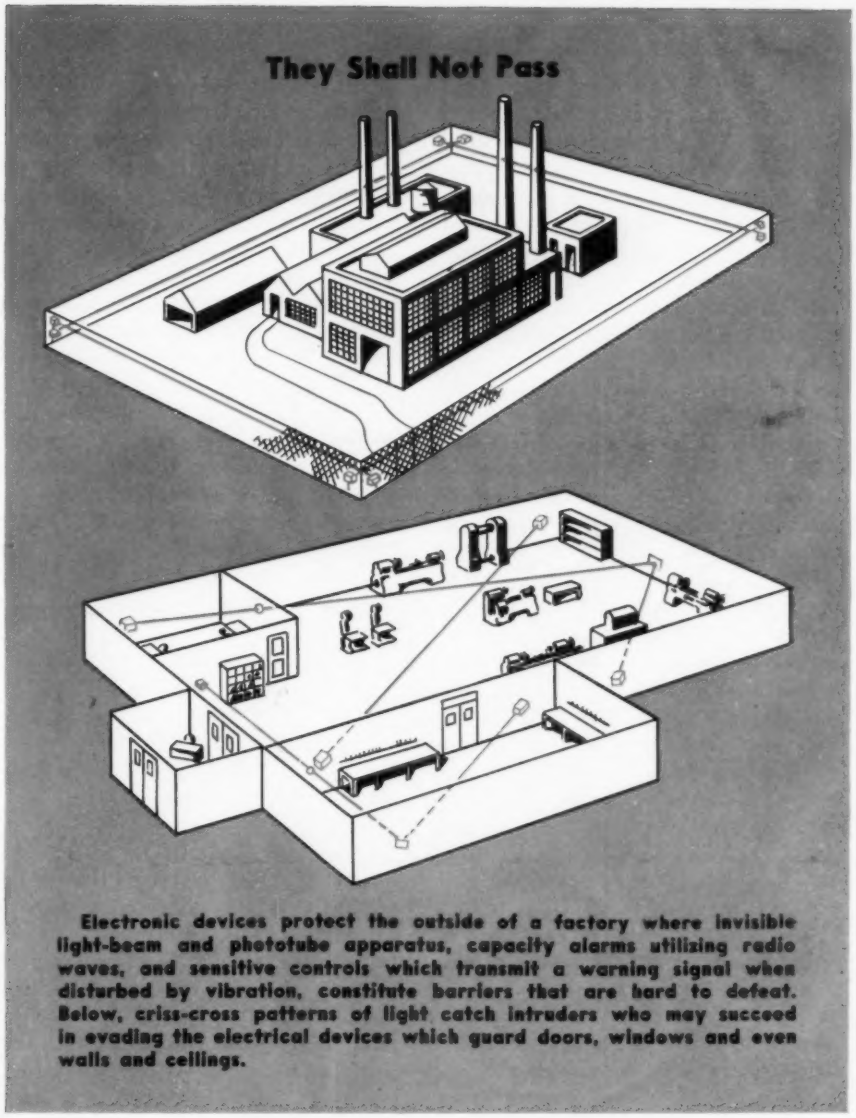
The maximum length of beams for indoor systems is about 150 feet in a straight line from light source to receiver. When mirrors are used to reflect the beam back and forth across a room the beam length is



Large central station of an electrical protective system. Operation of the alarms on any protected property causes a signal on the large board. Dispatchers in the foreground locate the scene, send special police, notify authorities.

reduced by approximately 50 percent for each mirror used. This is a practical rather than a theoretical limitation, based upon considerable operating experience. The indoor system may be used also for short distances out-of-doors, in which case the light source and receiving units are equipped with protective hoods to shield the lenses from the weather and to reduce extraneous light that might upset the circuit.

The protection of outdoor areas ordinarily requires a photoelectric system capable of projecting a much longer beam than indoor systems. Such systems usually are installed for boundary protection, particularly as a secondary line of defense inside of wire fences or other types of physical barriers, to detect and report the presence of intruders. The equipment for such systems is necessarily of a different character than that used indoors. The light source and receiving units are completely weatherproof and ruggedly constructed to withstand outdoor conditions. The beam, which generally has more power than the indoor system, in conjunction with its receiving device, is effective over distances up to 500 feet even under adverse conditions such as rain, snow, sleet and fog. Two light bulbs, each capable of operating the system independently, are sometimes provided for safety. The beam is large enough to avoid interruptions by small birds and animals, bits of flying paper and leaves, or other small objects.



Electronic devices protect the outside of a factory where invisible light-beam and phototube apparatus, capacity alarms utilizing radio waves, and sensitive controls which transmit a warning signal when disturbed by vibration, constitute barriers that are hard to defeat. Below, criss-cross patterns of light catch intruders who may succeed in evading the electrical devices which guard doors, windows and even walls and ceilings.

Photoelectric System Outdoors

The important feature of this outdoor system, however, is the use of a modulated light beam to whose frequency the receiver is tuned. By this method of operation the receiving equipment is very sensitive, which makes it possible to operate over long distances. Furthermore, the receiving unit will respond only to the light projected from the light source, and no other light that might be applied accidentally or maliciously will prevent the system from operating. The system is also designed so that momentary power failures will not cause alarms.

Photoelectric systems also can be used for fire detection, but such systems have not been developed extensively because of relative equipment costs and the wide use of exceptionally effective automatic fire detecting systems of other types, particularly those operating on the rate-of-temperature-rise principle. Photoelectric devices, however, are used extensively for fire and smoke detection in air duct systems, particularly large air conditioning installations, where fires are likely to start in filters or in combustible material drawn into the systems. There are many cases on record in which small fires in air duct systems have caused exceptionally heavy damage by smoke and hot gases being circulated through the air ducts to other parts of the building. To detect such fires quickly, photoelectric devices are installed which project a light beam across the interior of the duct. This beam is reflected back to a receiver, controlling devices which automatically close dampers, shut off fans, and sound warnings before any damage can be done.

Electronic alarm systems of the body capacity type have come into extensive use in recent years for

the protection of safes and metal cabinets, superseding the former method of inclosing them in electrically lined wooden cabinets which had to be especially built. With one electronic method, now in common use, a unit containing a vacuum tube oscillator is connected to the safe which is insulated from the ground. The safe and the ground form part of the electrical system and when the electrostatic capacity between these two elements is increased by a person or object approaching the safe, the balance of the system is upset and through the action of amplifying devices an alarm results.

This same principle has been applied in the last two years to the protection of outdoor areas such as property boundaries by connecting a similar unit containing a vacuum tube oscillator to field or "antenna" wires situated where the protection is desired and at the appropriate height above the ground. Since the electronic unit may be adjusted to detect the approach of a person within a few feet of the antenna, protection is effective up to a height of several feet above the ground. On level ground the wires attached to insulators are supported on steel or wooden posts properly spaced to prevent sway. Closer spacing may be required over rolling ground. A single unit can provide protection for four or five hundred lineal feet of boundary. Any number of units can be operated without interference. Alarm signals of this type are received at a control center, usually by means of indicating target drops which show the particular unit that has been operated.

These electronic systems as applied to the protection of war industries are proving invaluable in supplementing watchman and guard forces, often providing a considerably higher degree of protection with less manpower. In many smaller plants and in certain buildings of large plants, these systems when combined with other automatic protection often are used to supplant watchmen entirely. This is desirable only when the systems can be connected to a central station where guards are constantly on duty to investigate and maintain continuous electrical supervision of the protection systems.

The foregoing outlines only briefly how electronics is being applied today in the field of industrial protection. Now, without going too far out on a limb, we will endeavor to take a look into the future.

What the Future Holds

It is generally admitted that prognostications may assume dangerous proportions and to attempt to foretell the future of protection services is perhaps no exception. Over the last 70 years burglar alarm systems have undergone tremendous development, and fire alarm and other electrical supervisory systems have kept pace. Therefore, it would be expected that with the coming of the electronic age, electronic systems will provide one of the foremost methods of protection.

Undoubtedly, the biggest opportunity will be in the burglary or intrusion detection field, since the success of such systems depends upon their automatic operation.

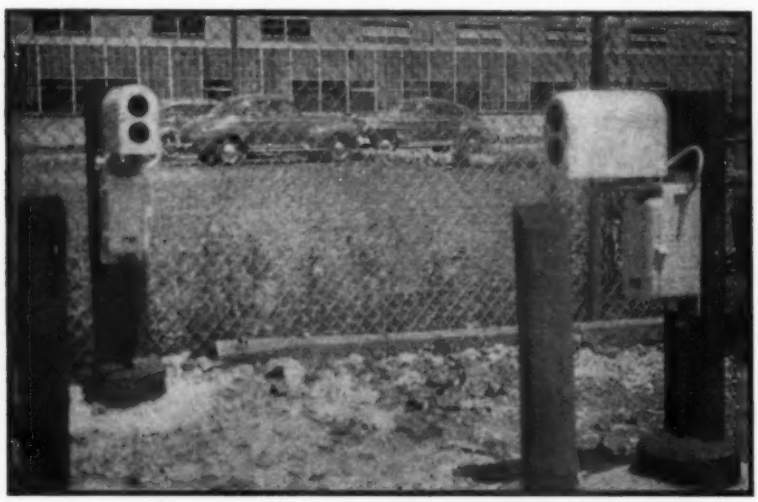
Invisible light is now being used successfully for detecting intruders and photoelectric equipment for that purpose has been highly developed and widely used. In the future, more sensitive phototubes having response further in the infra-red will extend the range and scope of this protection.

In still another part of the spectrum sound is being used in thousands of installations for the purpose of revealing attacks upon vault structures. These sound waves are principally within the audible frequency range. In the future it is quite possible that supersonic sound waves in the neighborhood of 20,000 to 30,000 cycles may be employed to establish standing waves or beams of wave energy to detect intrusion.

Just as the heat from stars may be measured by radiometers or bolometers, so may the heat from incipient fires be detected. Using more sensitive versions of these devices the radiant heat from the human body has been found sufficient to actuate an alarm system even over a distance of a few hundred feet.

Unquestionably, the greatest advance will occur in the field of microwaves where electronic development of circuit elements is now receiving such a tremendous impetus due to war needs. It does not require a great stretch of the imagination to see how premises to be protected might be interwoven or encircled with invisible radio waves which if even slightly disturbed would cause a reaction in the associated equipment to signal an alarm.

These few remarks only scratch the surface of what the future may hold in the field of protection based on electronic principles. It would be unwise to prophesy further at a time when much secrecy surrounds many of the amazing developments in the electronic field.



Package unit photo-electric protection devices which are now a familiar sight to many wholesalers. War-time demand for them has been for safeguarding properties of utilities, war-plants, etc.

** Chief Engineer, American District Telegraph Co..*

Abridged from article that appeared under the title, "Protection of Property by Electronic Methods," in the March 1943 issue of "Electronics," founded by McGraw-Hill in 1930 as the pioneer publication in that field

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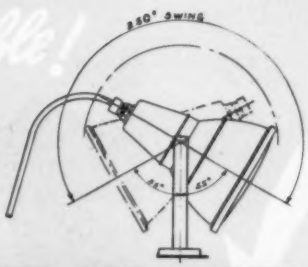
Adjustable! Data!



250° swing vertically; 360° horizontally, by adjusting wing nuts on bracket and base.

200-watt PS-30 Incandescent Lamp

Beam spread	50°
Overall spread	145°
Lumen output	2565
Beam candlepower	7400

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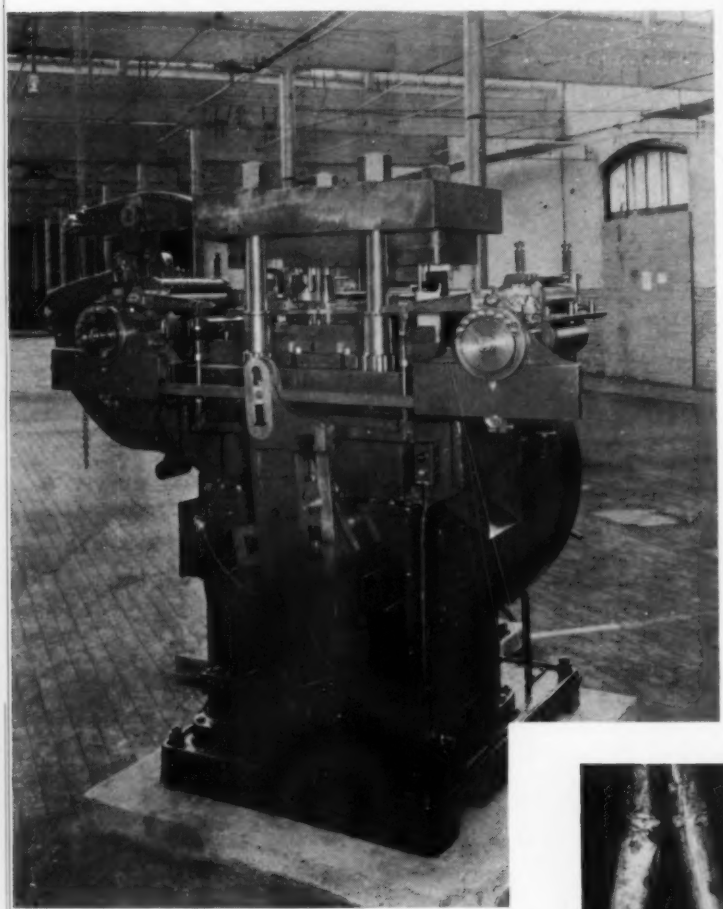
Electronic Production Controls Needed in Every Industry*

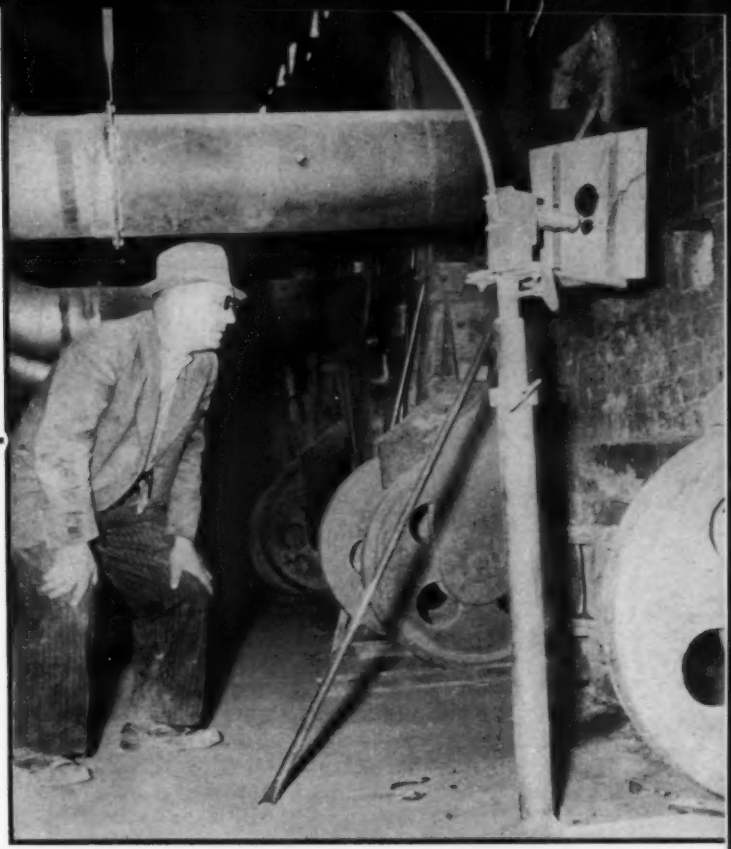
BALANCE — Westinghouse trues up electric motor rotors by running them in this electromagnetic unbalance detection machine which makes use of a vacuum tube amplifier. (Right)



PROTECTION—Metal strip fed into this high-speed progressive punching machine is first checked automatically by a phototube device to make sure that it is of uniform quality. (Above)

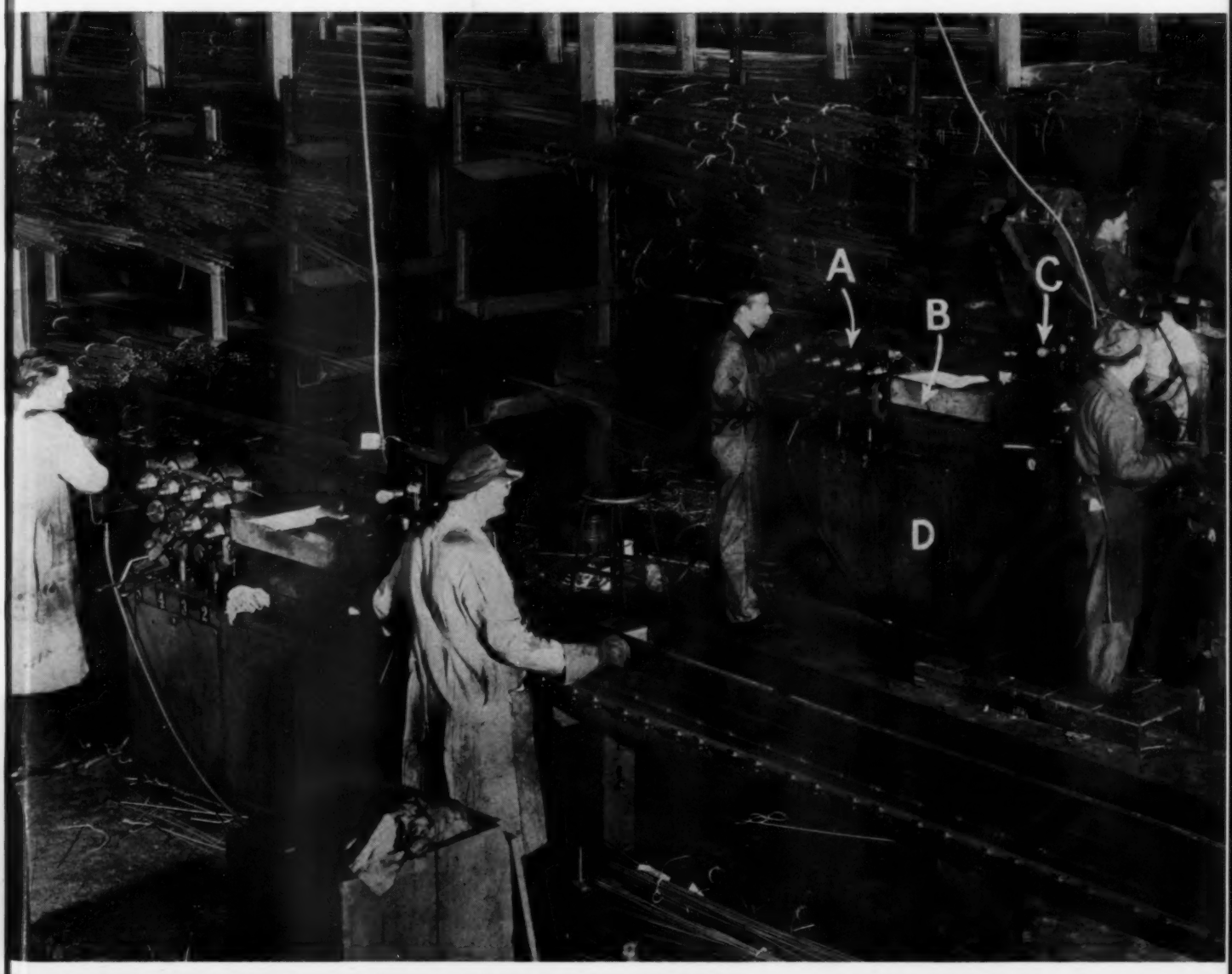
PROCESSING—Tubing is here fed into 240 kc induction heating apparatus which anneals the tips and facilitates later operations. The hood over the hairpin coil which applies power is used to carry away gases. (Right)

Speaking of Post War Selling



TEMPERATURE—GE phototube holder and optical system, trained into cement kiln for temperature control at Nazareth Portland Cement Company plant. (Right)

INSPECTION—Two electronic flaw detectors at work at Bundy Tubing Company automatically marking steel tubing at the rate of 300 feet per minute. (A) Marking rollers operated by tube equipment. (B) Magnetic unit with three balanced pick-up coils. (C) Pilot lamp assembly to indicate operation of equipment. (D) location of amplifiers, etc. (Below)



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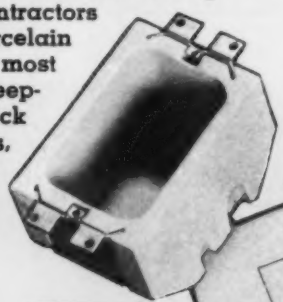
WAR CONSTRUCTION

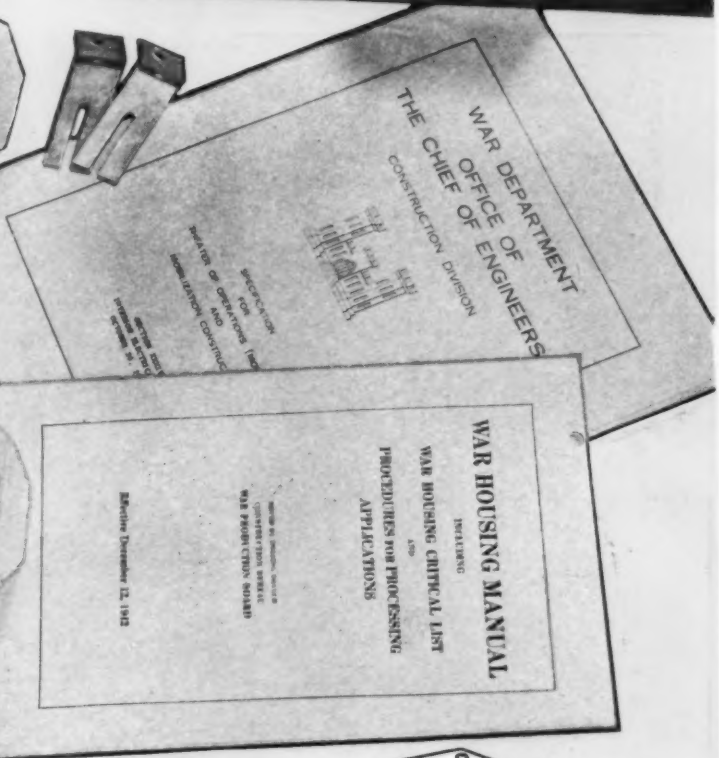
by Stocking for Prompt Delivery These Non-Critical Wiring Materials Required by Government Directives, Orders and Construction Specifications.

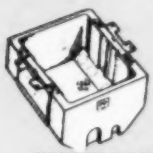
All Government Directives, Orders and Construction Specifications covering electrical wiring construction require the use of non-metallic, or Porcelain Outlet Boxes and non-metallic—Knob and Tube—wiring. For a line of Porcelain Outlet Boxes that meets *all* the standards of the electrical industry, Underwriters' approval—the line that has the hearty acceptance of Electrical Contractors everywhere—*insist* on Porcelain Products, Inc. You can do most to aid the War Effort by keeping a sufficiently large stock of Porcelain Outlet Boxes, Knobs, Tubes, Cleats and Wood-back Racks on hand to assure prompt deliveries for all War construction.

Wood-back Racks are required for War-time Construction by War Department Construction Division Specifications. Write for full details.



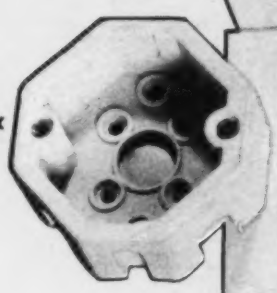
SWITCH BOX
8311—Regular
8311½—Shallow





SWITCH BOXES
8315—Two Gang

8317—All-Porcelain



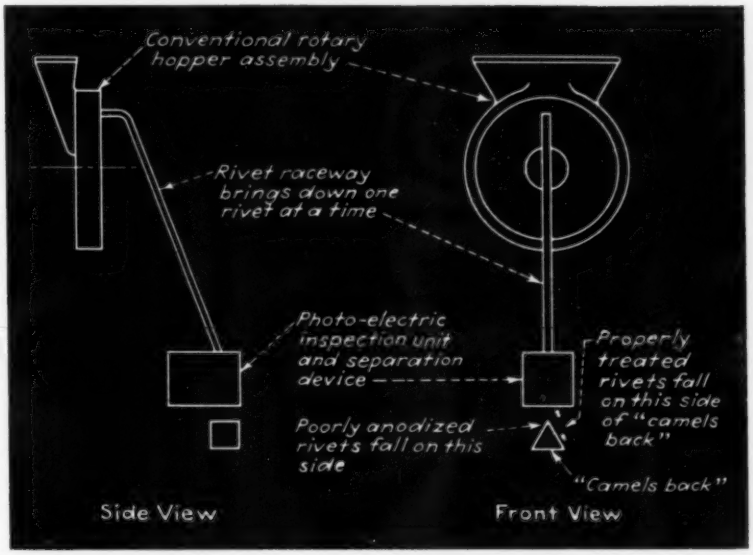
OUTLET BOX
8313—3¼"
8314—4"

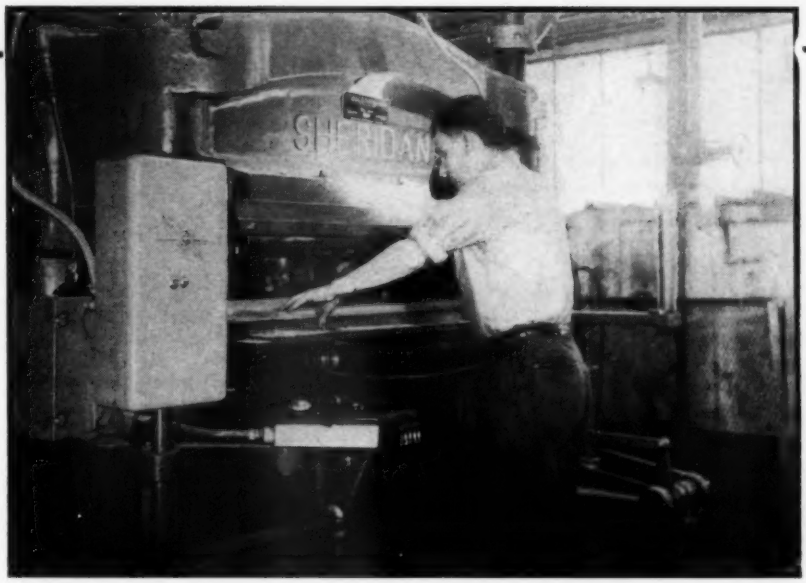
Ready Box
8318—Regular 8318½—Deep

SURFOLETS

PORCELAIN PRODUCTS, INC.
FINDLAY, OHIO

INSPECTOR—How a high-speed electronic rivet inspector works. Poorly anodized rivets reflect less light from a lamp to a phototube than properly finished rivets, and the resulting difference in phototube amplifier current operates a switch. The switch actuates an electromagnetic hammer, or a valve controlling an air-jet, in such a way that defective rivets are flicked or blown to one side as they leave the race-way.


Conventional rotary hopper assembly
Rivet raceway brings down one rivet at a time
Photo-electric inspection unit and separation device
Properly treated rivets fall on this side of "camels back"
Poorly anodized rivets fall on this side
"Camels back"
Side View
Front View



DETECTOR—Here an Electronic Control Corporation device, using phototubes, prevents operation of an embossing press if the operator's arms are in danger. (Left)

DUST—Electrostatic precipitators to rid the air of dust and dirt use electronic principles, are more efficient than mechanical filters. (Below)

***Illustrations and captions from the following two articles that appeared in the March 1943 issue of *Electronics*, founded by McGraw-Hill in 1930 as the pioneer magazine in that field:**

"Production Controls Aid the War Program," by Ralph A. Powers, Bundy Tubing Company, and "Industrial Applications Involving Electronic Detection," by Abraham Edelman, Photobell Corporation.

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HOT CATHODE FLUORESCENT LIGHTING SYSTEMS

are now available through the manufacturing and distributing facilities of

EDWIN F. GUTH CO.

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F. W. WAKEFIELD BRASS COMPANY

•

FOSTORIA PRESSED STEEL CORP.

These companies will merchandise the Artkraft systems under the name of Guth-Artkraft Fixtures, Wakefield-Artkraft Fixtures and Fostoria-Artkraft Fixtures. Artkraft licenses with other fixture manufacturers also will be announced soon.

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1. Artkraft Resonant Starting makes unnecessary the use of the Starter Switch.

2. Only Artkraft gives you a 3,000-hour guaranteed fluorescent lamp—a lamp with a rated life of 5,000 to 6,000 hours!

3. Efficient operation at 85 to 135 volts is made possible by Artkraft's Constant Voltage Power Pack. Also adaptable to single or three-phase 220- and 440-volt systems.

4. Artkraft lamps feature a corrugated mesh-ribbon filament, which permits the use of abundantly more emissive compound. Controlled temperature of this filament by means of a Constant-Temp feature, furthermore prevents rapid discharge of this compound.

5. Artkraft lamps stay brighter longer, since blackening in the light column is reduced by the cathode design.

6. Artkraft gives more light for the same current.

7. "Easy Mount" Luminaire permits instant removal without tools, for cleaning nonferrous reflector or lamps.

8. Field tested for over five years.

9. Stroboscopic (flickering) effect has been substantially reduced.

10. 100% Power Factor at rated voltage and 98% or over within the 85 to 135-volt range.

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We admit, the Artkraft Story Sounds Almost Too Good to be True!

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- all the many well known advantages of fluorescent
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As told to

Henry W. Young

Fox-hole Tales From The Wholesalers' Battlefront

Ability to Substitute Rates You As Institute —With Your Customers

W. E. Cornell, salesman for the Palmer Electric Co., Seattle, Wash., says that of all the functions of the wholesaler's salesman under present conditions, such as engineering, servicing, helping the contractor in pricing bids and expediting in all its phases, the one thing that stands out in his mind as most important is ability to substitute.

It is an old-fashioned word and had a different meaning. It meant —get your materials substituted for the other fellow's to get the order. Now it means—substitute when necessary to get the war machine running and keep it running.

"Knowing materials that are somewhere available within your reach that will fill the bill, in place of materials that are unavailable in time for the job; that is the important thing," he said. "That in turn means that you must not only know your own lines and stocks, but you must be almost as familiar with your competitor's stocks and local factory stocks. You must also know every item of your own or other people's stocks that will do the work of every other similar kind of item. What the war industry customer needs now is results, however arrived at.

"We salesmen are getting to be almost like switch men in a switch yard, directing traffic. To get the materials into such channels that they will reach the place where they are most vitally needed, in the shortest possible time, is one of our main problems.

"Many of our customers said in the old days, 'Give me a salesman who knows his lines. We don't care what kind of clothes he wears. He can even chew tobacco. But he must know his stuff.' Now, they are expecting him to know not only his own stuff but everybody elses.

"Another pet name they had for the wholesaler's salesman, when in a friendly mood, was that he was a regular walking encyclopedia of information on everything new in the industry. The Lord knows that we tried to live up to it. But now, for my own part, I might say that I don't feel as much like an encyclopedia as I do like an animated card inventory system."

W. E. Cornell, salesman for the Palmer Electric Co., Seattle, Wash., who believes that the ability to substitute, rates a salesman with his customers.

Neither Dehydration Nor Tungsten Troubles Could Stump Belnap

J. R. Simplot, in Idaho, had started a dehydrating plant on a new principle, embodying ovens facing out on a large central room. Each oven was equipped with a 30 hp. electric motor operating a propeller type fan. The fan blew air from an oil-fired heater, at 160 degrees temperature, over the food products to be dried. These consisted of potatoes, fruits and vegetables ranged in trays in the front part of the oven, the moisture laden air discharge into the room.

He had a good start with the

R. S. Belnap, Boise, Idaho, sales representative for the General Electric Supply Corp., who was not stumped by either dehydration or tungsten troubles.

three ovens and was selling all the vegetables and fruit he could process to the government for lease lend.

Then the government wanted him to expand the plant to 10 ovens, and would back him financially.

This was the kind of occurrence that comes to light frequently in all parts of the country, where a small manufacturer or processor has demonstrated his ability to produce something urgently needed in the war effort. It is also characteristic of these cases that when expansion time comes, the electrical wholesaler, through his salesmen, is called upon not only to help procure the necessary materials but often to engineer the job from the electrical standpoint. In this case it happened to be R. S. Belnap, Boise sales representative of the General Electric Supply Corp., who was called upon to officiate.

Belnap's job in this case was to help the busy food processor to change over his plant without interrupting operation, practically engineer the job and procure the necessary materials and equipment. It included:

(1) Planning the power distribution system
(2) Locating panel boards
(3) Providing fuse protection
(4) Providing gear ratio motors to drive conveyors
(5) Work out the complete conveyor system
(6) Procure materials and equipment (first on A-1-J and later on AA-2X)
(7) Light all conveyors with fluorescent lighting units.
(8) Design the general wiring system for the enlarged plant

Interleaved with other jobs of a similar character, this dehydrating plant took about two full weeks of the time of the "salesman," if so he may be termed. Of course, since then he has helped to maintain the plant, securing the electrical materials and supplies necessary for that purpose.

Belnap had another experience along the same lines, only this time it was a tungsten mine, and tungsten is a highly necessary war-time product as everyone knows.

The time came when they needed emergency power and were in a jam because the most favorable delivery date estimate on the necessary equipment was 12 months. Belknap then became the Knight Errant of this mine in distress and fared forth to comb the territory, looking at every Diesel engine he had record of, seeking to get one for the mine. Finally he landed one that would do. It had been doing duty on a gold dredge that had been shut down due to the closing of gold mining operations for the duration.

The engine was a 350 hp. Diesel, which was sufficient capacity to meet the emergency. The mine operator and the dredge operator were brought together and the deal closed, at no profit whatsoever to the wholesaler's salesman, being just another of those things considered to be "all in the day's work" on the wholesalers' battle front.

Salesman "Doubles in Brass"—and Orders

It is a pity that all the activities of electrical wholesalers' salesmen in this war work cannot be recorded to the everlasting credit of the salesman fraternity. But due to "angles," "repercussions," and whatnot, many have to go by without specific mention. Here is a typical example with the dim-out restrictions applied until the light is practically hid under a bushel.

A wholesaler's salesman in the state of ——— came in contact with ——— war project. He started in the ordinary way to make himself useful even before construction was started. He showed himself adept at locating needed materials and supplies and in facilitating deliveries.

Project officials started first by calling him up frequently and asking him to help in locating needed supplies. He demonstrated his "can do" ability so regularly that they insisted that he be at the project more often, so that they could consult with him direct, as necessary. This soon resulted in his spending seventy-five percent of his time on the project.

But even this was not enough. They decided that it represented lost motion for them to first get information from him as to sources of supply and themselves contact the manufacturers regarding priorities, delivery dates, follow-up, etc., so they said to him: "You do all of it." They placed at his disposal their long-distance telephone facilities and telegram facilties and turned the whole procurement and expediting job over to him, as far as the electrical supplies were concerned.

He is still a wholesaler's salesman and draws his pay from the wholesaler, but he functions as the procurement department of an important war project.

Recent WPB Orders And Revisions—A Digest

Short reviews presenting in reference form highlights of government orders issued during the past six months, which have a direct bearing on the everyday business operations of electrical wholesalers and their salesmen

Batteries, Flashlights, Under L-71 Control

As amended on October 2, 1942, Limitation Order L-71 established overall control over production of any cell batteries and flashlights for civilian use. As well as curtailing the production and designating the quantities of critical metals allowable, the order invoked the following restriction on sales and deliveries: No manufacturer may transfer a new flashlight or other portable electric light except on an order bearing a preference rating of A-10 or higher, or when a wholesaler or dealer certifies that the item is to replace in inventory a like number which have been sold on A-10 or higher.

Exempted are flashlights and other portable electric lights sold to the Army, Navy, Maritime Commission, War Shipping Administration, and Lend-Lease.

CMP Plan— Added Regulations

Virtually all principal operating procedures which will govern industry under the Controlled Materials Plan were established on February 9, 1943, with the issuance of CMP Regulation Nos. 3 and 5.

Regulation No. 3 defined the place of preference ratings under CMP, while No. 5 provides methods for obtaining maintenance, repair and operating supplies. Included was the provision that a delivery order bearing a preference rating and an allotment number or symbol outranks an order bearing the same rating but no allotment identification. It is not, however, superior to another order bearing a higher rating.

Regulation No. 5 provides for the use of MRO (maintenance, repair and operating supplies) and SO (small order) in connection with preference ratings. An amendment on February 16 specified that the term "maintenance, repair and operating supplies" includes only those materials which are actually required for directly processing the material or product manufactured, or for the maintenance, repair and operation of the machinery and equipment used in manufacture. The amendment as issued gave a long list of supplies used in the business of manufacturing but which are not eligible for MRO rating.

Conduit, Tubing— Restricted by L-225

Electrical conduit, electrical metallic tubings and raceways were restricted to construction which bears an A-1-j preference rating in the General Limitation Order L-225, issued December 16, 1942.

Further restrictions limit the use of any metallic-sheathed conduit to the following uses: where wiring will be exposed to mechanical danger; where wiring is to be imbedded in concrete or masonry walls; for wiring within elevator hoists and for elevator power, control and signal purposes; when wiring will be in a wet or damp place.

Flexible metal conduit or tubing is limited by L-225 to uses where the flexibility is necessary in lengths less than 12 feet from rigid electrical conduit or tubing for electric motors, current consuming devices, or electric control equipment.

Copper Sales Procedure, M-9-a Clarified

Procedures to be followed by a wholesaler in marketing copper were covered in WPB orders dated February 6, March 4 and March 8, 1943, amending Copper Order M-9-a.

Under these regulations warehouses distributing copper mill or brass mill products are permitted to fill authorized controlled materials orders, or orders bearing a preference rating of AA-5 or higher, for 500 pounds or less of any item to any one destination at any one time. Not more than 2000 pounds of any one item may be delivered to a customer during a month.

Wire Mill Direction No. 1 stated

WAR TIME USES
ARE BUILDING PEACE-
TIME DEMAND for

Electric Audible Signaling

TIE UP **NOW**
WITH THIS TREMENDOUSLY
GROWING BUSINESS.

Profitable and logical sales are open to the wholesaler, wholesalers' salesman and electrical contractor,—both NOW and in the IMMEDIATE post-war period—on the essentially modern audible electrical signaling systems developed by Schwarze Electric Company, pioneer manufacturers in this field.

Lay a strong foundation now, through sales for war production, on which to build substantial future business, with steady profits. *As wholesale inventories are now low,* this is the ideal time to take on this MODERN line!

SCHWARZE FARADAY

INDUSTRIAL

War plants now are installing more and more Schwarze signaling systems, to stream-line production and to checkmate saboteurs. Changes to peace time production, will call for changes in these systems. Business NOW — business THEN!

MARINE

The U. S. Navy and Merchant Marine buy the highly advanced Schwarze Marine Signal line, and use it widely. These advanced designs will be wanted for commercial boats and private yacht construction in vast quantities, in the peace years.

ELECTRICAL SIGNALING a COMING INDUSTRY

Industrial and Marine applications are but two of the most obvious developments of audible electrical signaling as developed by SCHWARZE. WRITE TODAY for the complete new Schwarze catalog, — a book which has received wide acclaim for its simplicity, ease of use, and efficient indexing.

YOURS WITHOUT OBLIGATION

Distributors in Principal Cities

SCHWARZE ELECTRIC CO.

1885 CHURCH STREET • ADRIAN, MICHIGAN

that the restrictions as noted above shall not apply to deliveries of wire and cable, sizes 4/0 and larger, in full reels not exceeding 1000 feet each.

Owners of idle stocks of copper and steel and their alloys who sell directly to authorized war producers, as permitted in PR-13, were instructed to report such sales of copper to the WPB, care of Copper Recovery Corporation, 200 Madison Ave., New York, and sales of steel to WPB, care Steel Recovery Corporation, Pittsburgh, Pa., in an amendment to Schedule A, Priorities Regulation No. 13, dated November 19, 1942.

Fans and Repairs— L-176 Interpreted

The sale of portable electric fans by a concern which assembles parts brought together in one place, and the sale of electric fans in kit form, was prohibited by WPB in the September 5, 1942, interpretation of Limitation Order L-176. The interpretation defined those who bring together the fan parts as "manufacturers" and therefore subject to the limitation on sales as provided in the original L-176.

A later amendment to the order provides for a continued supply of parts for maintenance and repair of portable electric fans. Previous restrictions were eased to permit manufacturing of spare parts on a limited basis. It also establishes the rule that no wholesaler or manufacturer may deliver a new part unless a similar part is given in exchange.

Fixtures and Metals Which L-212 Restricts

In a move designed to direct the flow of all incandescent lighting fixtures into war work, defense housing and other essential civilian uses, and to conserve critical materials, the War Production Board issued Limitation Order L-212 on March 31, 1943.

This regulation restricts to orders bearing a preference rating of A-1-j or better, the sale of industrial and utility lighting fixtures manufactured following the date of the order. Fixtures already in the inventories of wholesalers and retailers are not restricted.

The order controls the manufacturing of lighting fixtures by limiting the amount of metal permitted in the manufacture of standard utility and industrial incandescent lighting fixtures is reduced about 60 percent. The amount of metal to be permitted in the manufacture of residential fixtures is reduced 80 percent. Additional savings in metal were ordered by L-212 through simplification and a reduction in the number of sizes and shapes to be produced.

No preference rating requirement was placed on the sales of residential fixtures. A sufficient number of fixtures for the defense housing plan and for essential civilian needs is expected through issuance of raw materials to the manufacturers through CMP allotments.

Fluorescent Fixtures— Under L-78 Controls

Following a succession of amendments since its original issuance, Limitation Order L-78 now places the following restrictions on the manufacture, sale and delivery of fluorescent lighting fixtures:

Fixtures manufactured or assembled before June 1, 1942, may be sold on an order bearing a preference rating of B-2 or higher. Those fixtures manufactured subsequent to June 1, 1942, may be sold on an order bearing a rating of A-1-j or better. Orders for component parts need a rating of A-1-j or higher.

Fluorescent fixtures which use no lamp rated at more than 30 watts may be sold without restriction. Any fixture may be sold without restriction to the Army, Navy, Maritime Commission, War Shipping Administration, Metals Reserve Company, or any corporation organized under Section 5 (d) of the Reconstruction Finance Corporation Act as amended.

The use of metal in the manufacture of shields, baffles or louvres, was banned except for the minimum metal necessary to join them to the reflectors, by an amendment to L-78 which took effect on February 9, 1943. This followed up the October 19, 1942, rule which prohibited the use of metal in the manufacture of fluorescent lighting fixtures.

The total overall weight of metal permissible to be used in the manufacture of fixtures was established to take effect on May 4, 1943, by an amendment which specified: For use with two or three 40-watt hot cathode tubes or bulbs, not more than 3 pounds of ferrous metals; for two 100-watt hot cathode tubes and bulbs, not more than 4 pounds of ferrous metals; for two or three continuous parallel rows of 40-watt hot cathode tubes or bulbs, not more than 3½ pounds of ferrous metals for each four linear feet of fixture.

Fuse Sales— Under L-161

Fuse sales by manufacturers were restricted to orders rated A-1-j or higher by an amendment to L-161, which went into effect on January 21, 1943.

However, the WPB emphasized that wholesalers, contractors and dealers must continue to deliver fuses from stock *without* insisting on preference ratings. Wholesalers were instructed to use PD-1X to keep their stocks replenished and maintained at adequate working levels.

Institutions Given CMP Procedure

In order to provide government agencies and public and private institutions with a uniform procedure for obtaining maintenance, repair and operating supplies, both in the case of controlled materials obtained by CMP allotment symbols and in the case of materials or products obtained by preference ratings, the WPB issued on March 19, 1943, the CMP regulation 5-A.

Inventories, High Level Which L-219 Regulates

In order to provide an equitable distribution of consumer goods among wholesalers and retailers, Limitation Order L-219 was instituted on December 29, 1942. This order exercises control over concerns whose inventories exceed

$50,000, or whose business is more than $200,000 in one year.

L-219 includes in the consumer goods classification the following: light bulbs, lighting fixtures, refrigerators, washing machines, all other major and small electric appliances, radios, phonographs, records and supplies.

On April 6, 1943, an amendment to this order provided that merchants whose inventories are controlled by L-219 may exchange consumer goods with other merchants even if stocks on hand exceed the limits provided by the order.

The order puts controls of inventories on a quarterly basis, with restrictions on those concerns whose inventories at the beginning of a quarterly period are larger in proportion to sales, than was the relation of their inventory to sales in the base period of 1939, 1940, 1941.

Inventories Regulated— Order L-63

As brought up to date by an amendment on February 10, 1943, the Suppliers Inventory Limitation Order L-63 provides that: Suppliers located in the Eastern or Central Time zones must hold their maximum inventories within a total dollar value equal to either (a) twice the sales of such supplies shipped from inventory during the second preceding calendar month, or (b) two-thirds the sales of such supplies shipped from inventory during the three preceding months; a supplier located in any other time zone is limited to an inventory in dollar volume equal to either (a) three times the sales of such supplies shipped from inventory during the second preceding calendar month, or (b) the sales of such supplies shipped from inventory during the three preceding months.

Also included in the order was the provision that the supplier might stock an amount of seasonal goods equal to those he purchased during the peak period of a comparable period of the previous year. The peak must not last more than 90 days.

The supplier is permitted by L-63 as amended, to purchase and receive for delivery, supplies which will increase his stock above the maximum permissible inventory if, at the time of delivery, the supplier's inventory is below maximum, and the delivery is of the minimum quantity that can be commercially procured.

This order, L-63, applies only to those suppliers whose total inventory of all types of goods exceeds $20,000, or whose inventory of any particular type (such as elertrical, automotive, etc.) is more than $10,000.

Lamp Sales— L-28a Limitations

An amendment dated October 24, 1942, to L-28, the General Limitation Order covering incandescent, fluorescent and other electric discharge lamps, limits the application of preference ratings in distribution of these lamps to ratings of AA-5 or higher, and provides control over manufacture and delivery of light bulbs and tubes though schedules.

Included was the provision that no wholesaler or dealer could transfer photoflash or photoflood incandescent lamps, except on a rating of AA-5 or better, or to another wholesaler or to a manufacturer or dealer.

A later amendment, on March 30, 1943, permitted manufacturers to ship a limited number of lamps on unrated orders for resale to residential and commercial users who are not in a position to apply a rating. This was done to provide equitable distribution of lamps remaining after priority requirements of AA-5 or higher, are filled.

An interpretation of the amendment stated that no ratings can be assigned on Form PD-1X for incandescent, fluorescent, or other electric discharge lamps.

Maintenance Order— P-100 Revoked

Preference rating order, P-100, used for obtaining supplies for maintenance, repair and operation, was revoked on April 2, 1943 by the War Production Board.

The only exception is that any serial numbered copy of that order issued to a producer in the Dominion of Canada remains in effect either until it is revoked, or until the producer becomes eligible to apply the ratings of CMP-Regulation No. 5.

Motors & Generators— Under L-221 Control

Electric motors and generators went on the restricted list on December 2, 1942, through the WPB issuance of General Conservation Order L-221, and were restricted further by amendments on December 8, 1942, and in January, 1943.

As well as placing restrictions on the mechanical and electrical design of all motors and generators made after December 10, 1942, the order prohibits the delivery or acceptance of motors unless they comply with certain standards and are of the simplest mechanical and electrical design. It also requires that the purchaser certify and show reason why he must have a motor of a certain type, and restricts such motors to the conditions and purposes for which they are required.

Packing Cost May Be Added to Price

Under certain conditions, the expenses caused by special packaging of products sold or delivered to procurement agencies of the government, may be added to the maximum domestic price of those products, according to OPA's Supplementary Order No. 34. Among the conditions are: that the special packing be specified by the procurement agency; that the charge be listed separately on the invoice.

Labor and materials costs of special packing may be added to the maximum price when the commodity has been packed and the buyer specifies that unpacking and repacking are necessary, or when the buyer changes orders and requests packaging different than ordered previously.

Radio and Sound— P-133 for Maintenance

Equipment and supplies for maintenance and repair of radio communication and commercial sound recording facilities were assigned a preference rating of A-1-j by the issuance of Preference Rating Order

P-133 on October 7, 1942. On February 4, 1943, the order was amended to require a rating of AA-2X or higher.

Restrictions on the consumer's inventory were included in the order. They provide that the AA-2X rating may be used to place in inventory: not more than one spare tube for each socket; only those spare parts which are subject to frequent failing, or which are so unique that replacement involves prolonged delay; no new part when the defective parts can be repaired easily; only those 25-watt or higher-rated power tubes for which one has been returned to the manufacturer.

Refrigerator Sales—L-5-d Regulations

As amended on December 5, 1942, Limitation Order L-5 provides that a manufacturer's authorized transfers of domestic refrigerators shall be made through his normal distributive outlets on a basis proportionate to his distribution of new domestic mechanical refrigerators to them, respectively, during the year 1941, regardless of previous commitments or contracts.

Refrigerators in the hands of independent distributors or any other person not a manufacturer, may be transferred to any other person provided that the ultimate transfer is made under the provisions of the act, which requires a written statement regarding the lack of other suitable domestic mechanical refrigerators.

The order permits certain other specified transfers of refrigerators when a certificate has been obtained from the WPB.

Re-sale of Rated Goods

Persons purchasing material with the assistance of preference ratings are authorized by an amendment to Priorities Regulation No. 1, to sell it or make use of it for purposes other than the one for which it was originally obtained, under certain conditions.

The material may be used to fill any order rated AA-5 or higher, or a rating at least as high as that upon which the material was obtained, provided it is permissible under Priorities Regulation No. 13 and other specific regulations. Or the material may be used for the purchaser's own needs if he has been authorized on an AA-5 or higher rating to obtain such material for such a purpose.

If neither use is made of the material, it may be returned to the previous owner, or registered with a regional WPB office for redistribution.

Telegraph Services Get Ratings for MRO

Operators of wire telegraph, telephone and cable services were assigned two preference ratings in an amendment to Priorities Regulation P-130, issued October 17, 1942:

AA-5 for deliveries to an operator of material required by him for maintenance, repair and operating supplies or operating construction, and for deliveries of material required by the operator for construction of facilities necessary to serve defense projects bearing a rating of AA-5 or better (except that the operator may use the project's rating when it is better).

The order also restricts the operator's inventory, holding it to a maximum of 27½ percent of the materials used for all purposes during the previous year.

Telephone Orders—How to Place Them

Those who must place rush orders for scarce materials by telegraph and telephone are given simplified rules for applying the appropriate preference rating through amendments to Priorities Regulation No. 1, issued on December 28, 1942 and March 9, 1943.

Telegrams may be utilized when the following certification is made in the body of the telegram—"Ratings Certified." The sender will sign or authorize a copy of the telegram as provided in PR-7.

Any authorized official may order by telephone by stating that the rating he is extending is certified, and by sending to the supplier within 15 days a written confirmation bearing a certification of the preference rating.

Utilities MRO Supplies Under P-46 Rules

Higher ratings to the electric utilities for maintenance, repair and operating supplies, was provided in an amendment to P-46 on October 10, 1942.

This amendment, with two supplementary orders P-46-a and P-46-b, give MRO material an AA-5 rating, higher than the A-2 and A-5 ratings previously in effect, but lowest of all the AA ratings.

Included in the amending of P-46 was a tightening of WPB controls over the permitted volume of materials which may be used, the size of inventory, and indirectly, the amount of material which may be purchased from the wholesaler.

Paragraph F of P-46, as revised, limits withdrawals and inventories of materials transmission and distribution supplies to 60 percent of the 1940 base, and requires that not less than 75 percent of the permitted amount of materials be obtained from the inventories of other utilities. This provision has the effect of reducing to 15 percent the amount of materials that utilities may purchase from outside sources.

Wiring Devices—Limited by L-277

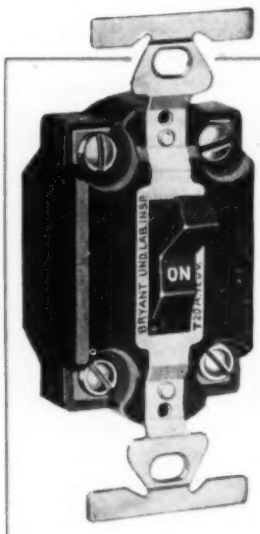
Further reductions in the amount of copper and copper-base alloys to be used in the manufacture of electrical wiring devices, were ordered in provisions of Limitation Order L-277, issued on April 12, 1943. The order went beyond the regulations of the M-9-c, by banning copper and its alloys in the current-carrying parts of many devices.

In the same order, wholesalers were instructed to use the PD-1X application to replace in stock wiring devices sold on unrated orders. Manufacturers sales were restricted to orders rated A-1-j or better.

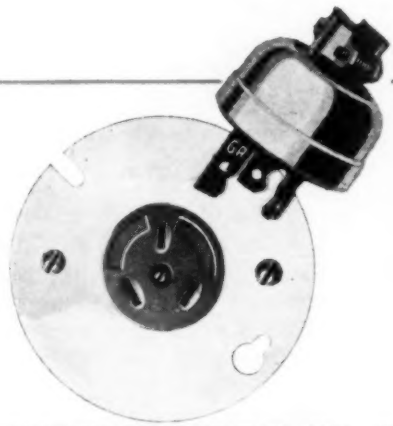
Among the wiring devices which can no longer be made with copper are: Sockets and lampholders; switches; receptacles; caps; plugs; connectors; taps. Component parts of the devices are also included in the order.

Bryant heavy duty wiring devices

Bryant industrial switches, sockets, outlets, fluorescent starters and devices can be depended upon to stand up under the extra strain of war time production conditions. And the Bryant electrical wholesaler can be depended upon to deliver the material promptly to the points where it is needed.



SHALLOW 20-AMPERE FLUSH SWITCH NO. 5862 is made to withstand the continuous use required in industrial service today. The mechanism is enclosed in rugged bakelite. The handle is made of a special unbreakable plastic. New type mechanism insures trouble-free service. U.L. "T" rated. Conforms to Federal Specifications.



20-AMPERE 3-WIRE OUTLET NO. 9324 AND NO. 9322 PLUG for grounding and for providing electrical service to industrial equipment. Long grounding prong on PLUG assures safe grounding. Extra heavy double-sided contacts insure positive register.

NO-BLINK STARTER FS4-NA provides perfect starts and also stops blinking immediately when the lamp becomes deactivated. When a worn out lamp is replaced, the starter functions at once—automatically.

SOLD THROUGH ELECTRICAL WHOLESALERS

THE BRYANT ELECTRIC COMPANY

BRIDGEPORT, CONNECTICUT

BRYANT
SUPERIOR WIRING DEVICES

115 YEARS 1828-1943

Spang Chalfant, Inc.—To supply the needs of the pioneer during the westward movement in 1828, C. F. Spang and his father began to manufacture wrought iron products. They chose Etna, a suburb of Pittsburg, for the company's location because it was one of the last outposts where wagon trains might be formed and outfitted. In 1840 the company pioneered in the manufacture of iron pipe to replace the inadequate and inefficient wood pipe then used to conduct water. In 1856 John W. Chalfant joined the Spang organization, thus forming the Spang Chalfant, Inc. Today this company can boast of operating one of the "oldest operating pipe mills in America," together with a modern seamless tubeplant.

100 YEARS 1843-1943

Hubbard and Company—Charles W. Hubbard started the Hubbard-Bakewell Company in a small shop located near the site of Old Fort Pitt at Pittsburgh, Pa., in 1843. The company has remained in Pittsburgh since the beginning and today operates three large and modernly-equipped plants in Pittsburgh, Chicago, and Oakland, California. John W. Hubbard, son of the original founder, now heads the company.

65 YEARS 1878-1943

Boston Woven Hose & Rubber Co.—The history of the Boston Woven Hose & Rubber Co. dates back to 1878 when three men, Theodore Ayrault Dodge, president; J. Edwin Davis, treasurer; and Robert Cowen, superintendent, chose Cambridge, Mass., as the factory site. From a small beginning the concern has grown steadily, adding many new products and fitting its policy to suit changing needs of its market.

Buffalo Forge Company—In 1878, two brothers, W. F. Wendt and Henry W. Wendt, formed the present company at 490 Broadway, Buffalo, New York. Through their efforts the venture soon turned into a highly successful business. Today Henry W. Wendt is chairman of the board, and Edgar F. Wendt, president, both being sons of the original founder, Henry W. Wendt.

The Okonite Company—John Haven Cheever pioneered the development of a mineral-base rubber compound for insulating wires and for its manufacture, founded the Okonite Co. in 1878. Not long after, Frank Cazenove Jones, Sr. joined him. Together they developed many new processes in the manufacture of wire and, as the electrical industry progressed, Okonite also moved ahead through continual research to find better methods for manufacturing various products. Frank C. Jones, who is now president, is the son of Frank Cazenove Jones, founder.

Robbins & Myers—Sixty-five years ago, Chandler Robbins and J. A. Myers got together and formed the Robbins & Myers Company in Springfield, Ohio. Through the years Robbins & Myers has expanded and developed its fan-building business and today utilizes its broad experience in this field to continually improve the techniques of ample interior ventilation. Richard A. Myers, grandson of founder J. A. Myers, is at present employed in the production end of the business.

60 YEARS 1883-1943

Clemson Bros., Inc.—George N. Clemson organized the company in 1883 at Middletown, New York which took over a business that had been established in 1879. Richard D. Clemson, son of the original founder, is president of the company today.

Crescent Insulated Wire & Cable Co.—In 1883 when C. Edward Murray was nineteen years old, he started a rubber reclaiming plant, brought in his father, J. Howard Murray and later was joined by a brother-in-law, R. R. Whitehead. The corporate name then was Murray, Whitehead, & Murray. In 1891 the present corporation was formed and Crescent started manufacturing insulated wire. At present C. Edward Murray is still president of the company.

55 YEARS 1888-1943

Anaconda Wire & Cable Company—The history of the present company can be traced back to the Norwich Insulated Wire Company of Harrison, N. J. which made the first helically-wrapped paper insulated cable in 1888. The present name was adopted after the merger of ten independent companies in 1929.

Automatic Switch Co.—The company was organized in Baltimore, Maryland, in 1888 by two men, Whittingham and Darrin, and reincorporated in 1906 in New York City. The Automatic Switch Co. today specializes in automatic switches and valves. David M. Darrin, son of the founder, is active in the company today.

Bryant Electric Company—To build quality into its line of electrical products has been the objective of the Bryant Electric Company ever since Waldo C. Bryant first started in business in 1888 at Bridgeport, Conn. Today Bryant Electric continues to sell through the electrical wholesaler, a policy that goes back over fifty years.

Harvey Hubbell, Inc.—Harvey Hubbell opened a small tool and machine shop in Bridgeport, Conn., in 1888. He started in a small way manufacturing one or two patented articles of his own. Being mechanically inclined, his atten-

When the **LIGHTS** *go on again*

ALL over the world, the name of NOMA will still be on the lips of the people who have found the bright side of life with lights made by NOMA.

Lights that have dimmed through these dark days and nights will again go on in every home to show the world once more that happiness is here to stay.

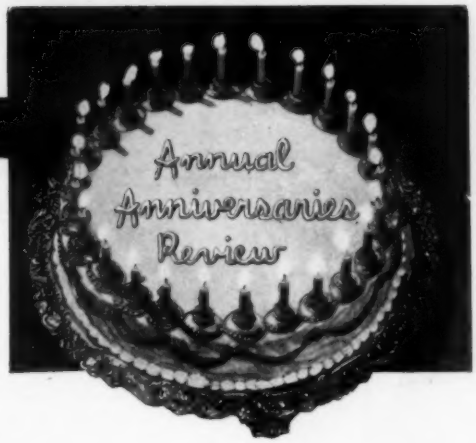
Let NOMA help you light your home in beauty and splendor when the family is together again to celebrate the brightest victory ever!

We still have available many of our lighting specialties. Our new line of toys will be ready soon.

NOMA ELECTRIC CORPORATION

55 WEST 13th STREET NEW YORK, N. Y.

The Greatest Name in Decorative Lighting



tion was directed to the possibilities of making products needed by the then rapidly growing electrical industry. Through the years, Harvey Hubbell, Inc. has been keeping pace with the rapidly developing needs of the industry.

50 YEARS 1893-1943

L. B. Allen Co., Inc.—Since 1893 the L. B. Allen Co. has been known as manufacturing chemical products including soldering materials. L. B. Allen, C. A. Allen, John D. Allen, and Stuart S. Crippen, Sr. were the original founders. Still connected with the company today is Stuart S. Crippen, Sr.

Independent Pneumatic Tool Co.—From the time C. E. Erickson and Axel Levedahl first started manufacturing machine tools in 1893, the company has kept step with the rapidly growing demands of this industry by continually keeping an eye on new developments and adding new products to its line whenever needed.

45 YEARS 1898-1943

The Thomas & Betts Co.—Back in 1898 Robert McKean Thomas, in association with his classmates from Princeton, Hobart D. Betts, now deceased, and Adnah McMurtrie, founded the company as a New York sales office for the Safety Armorite Conduit Co., of Pittsburgh, the Helios Mfg. Co. of Philadelphia, and the L. A. Chase Co. of Boston. They started the manufacture of electrical products in 1910, following their acquisition of the Standard Electric Fittings Co. of Stamford, Conn. Today Thomas and Betts' electrical fittings, tools, connectors, and specialties are known internationally. George C. Thomas, Jr., a nephew of Robert McKean Thomas, Sr., is now president.

40 YEARS 1903-1943

Appleton Electric Company—Albert Ivar Appleton, founder and president of the Appleton Electric Company, established himself as a manufacturer of electrical fittings and specialties in 1903. From a modest beginning with only two employees, the business has grown until today the Appleton plant occupies over 300,000 square feet of floor space and, the company has branch offices in many of the large cities throughout the United States.

Square D Company—One of the outstanding characteristics of this company since it started in business forty years ago in a one-room loft in Detroit, Michigan, has been its speedy adaptation to the ever changing times and conditions. Originally it was incorporated as McBride Manufacturing Company. Then, in 1917, due to the fact that customers referred to its trademark, a "D" within a square, more often than the original company name, it was decided to adopt the present name. Through the years, Square D has made a record for itself in the electrical field by steadily increasing the scope of its own facilities and continually adding new products to the line.

35 YEARS 1908-1943

Roller-Smith Company—For thirty-five years the Roller-Smith Company has been manufacturing electrical equipment. Frank W. Roller and David R. Smith formed the present company by combining the Whitney Electrical Instrument Company, Penacock, N. H., and the Switchboard Equipment Company, Bethlehem, Pa., in 1908.

30 YEARS 1913-1943

Great Western Fuse Company—In Pittsburgh, Pennsylvania, F. C. LaMar and P. J. Hopkins started the Great Western Fuse Company in 1913. During the company's thirty years of growth, F. C. LaMar has remained with the company and today is closely associated with its activities.

Killark Electrical Mfg. Co.—In 1913 Joseph Desloge, founder and president of the company, started in business manufacturing automobile fuses and bell transformers. Through the years Killark has steadily expanded its activities, including new products in its line as the demands of the industry dictated.

25 YEARS 1918-1943

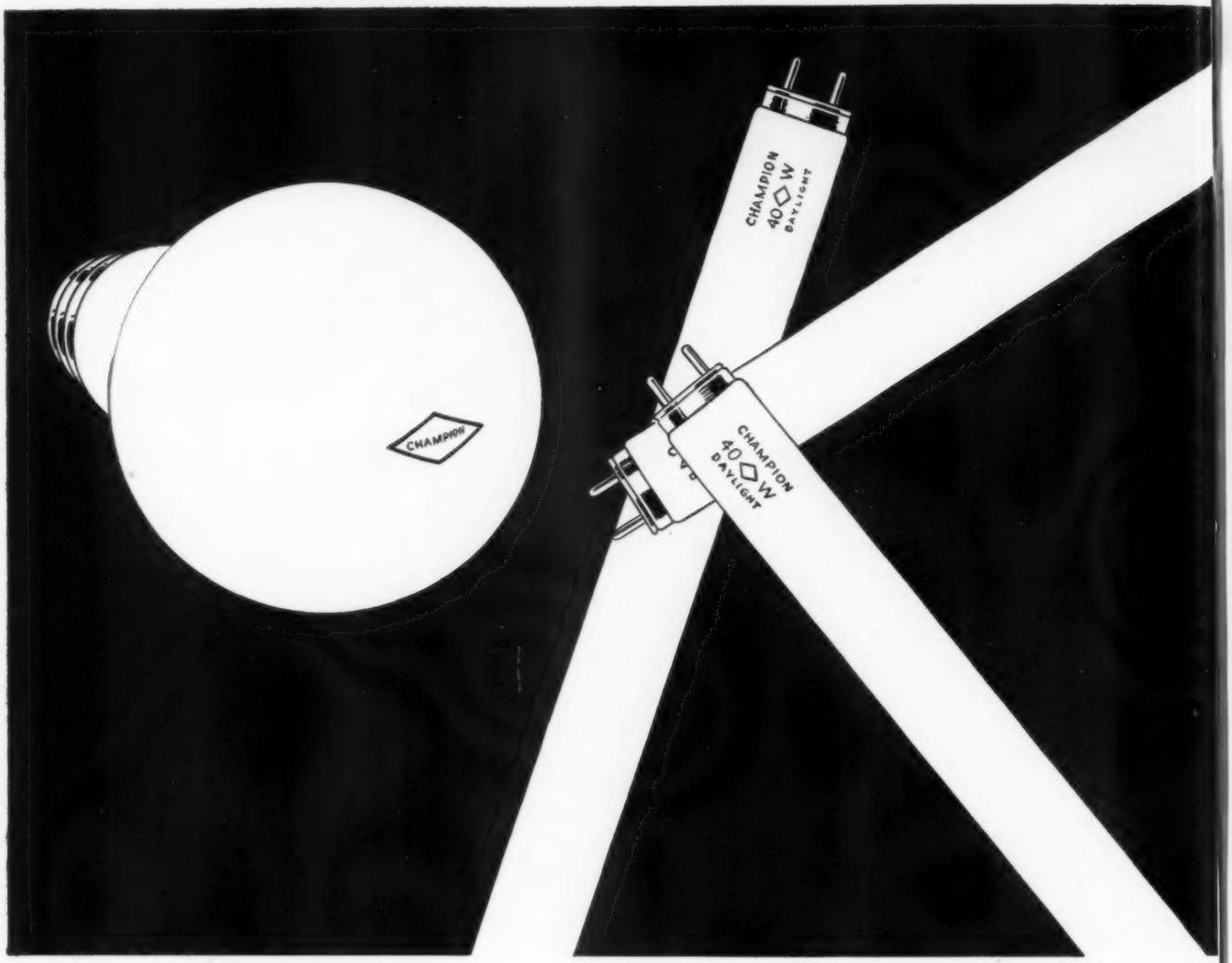
Liberty Electric Company—Around the close of World War 1, Carl L. Rost, founder and president of the Liberty Electric Co., started in business at Indianapolis, Indiana. During its twenty-five years of existence, the company has grown steadily in size and added new products to its line.

Union Insulating Co.—Although J. H. Parker was associated with the electrical industry since 1888, it was not until May, 1918, that he and W. M. Parker organized the Union Insulating Co., located then at Parkersburg, West Virginia. Today J. H. Parker, president, W. M. Parker, treasurer, and W. M. Parker, Jr. are actively associated with the company, a closely knit team, representing three generations of Parkers.

20 YEARS 1923-1943

Day-Brite Lighting, Inc.—A room in an old two-story residence in St. Louis, Mo., was Day-Brite's first manufacturing plant when founded by D. J. Biller and O. W. Klingsick in 1923. Step by step the company expanded as demands for display case equipment and allied products increased and new developments in the lighting industry occurred. Today this company ranks as one of the leading lighting installation specialists in the field.

Victor Electric Products, Inc.—Father and son, C. L. Harrison and C. L. Harrison, Jr., founded the present company on March 1, 1923, as a successor to the Corcoran Lamp Co., which had been in business for some fifty or sixty years previous. Today C. L. Harrison, Jr., is president.



That's what Your Customers say when You supply them with **CHAMPION** *Lamps*

There never was a time when dependable lamp replacements were more important than they are right now . . . Think what these four CHAMPION points mean to you and your customers under present conditions:

1. **Champion Quality** — backed by forty-three years of concentrated skill and experience, with every production, testing and development facility. Guaranteed to equal or exceed Federal Specifications.
2. **Champion Responsibility** — based on the resources of one of the largest and soundest manufacturing organizations in the lamp industry.
3. **Champion Service**—production capacity, ample storage and shipping facilities, an engineering staff and trained lamp men in the field immediately available on all lamp and lighting problems.
4. **Champion Economy** — the *diamond* mark on every lamp signifies lower light and lamp costs than those of any other lamp of equal quality.

CHAMPION LAMP WORKS

Lynn, Massachusetts

A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO.

NEW PRODUCTS you can SELL

FLOODLIGHT

Permaflector enclosed floodlight No. ST-200, for exterior applications, is designed to accommodate only the medium base 200-watt incandescent lamp. Unit consists of a formed sheet steel housing equipped with a silver mirrored glass Permaflector, convex heat-resisting cover glass, gasket, removable lens frame with clamp, porcelain socket, adjustable bracket and base, and corrosion-resistant, weatherproof cord grip fitting. Pittsburgh Reflector Co., Pittsburgh, Pa.

When writing mention WHOLESALER'S SALESMAN

CIRCUIT BREAKER

Features claimed for the Type AC Thermag circuit breaker are: The individual pole construction, quick break on manual and automatic trip, handle signal for single pole with automatic reset, signal button on double pole for trip indicator, magnetic arc quencher, non-welding type contacts. Unit is available for 50 amperes or less, 120 volts a.c. single or double pole. Frank Adam Electric Co., St. Louis, Mo.

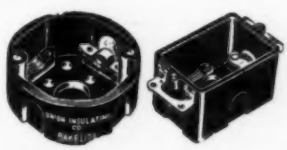
When writing mention WHOLESALER'S SALESMAN

LATCH

"Captive Latch," spring-type fastening, holds reflector to the top housing. Claimed to require only a quarter turn to remove reflector. No tools needed. Easy to operate. Latch is inconspicuous in its position between the lamps. Sylvania Electric Products, Inc., Salem, Mass.

When writing mention WHOLESALER'S SALESMAN

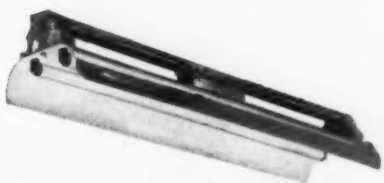
OUTLET BOXES



Bakelite outlet boxes, for surface or concealed wiring. Designed to give a maximum of strength with a minimum of weight. Boxes are said to be durable, resisting corrosion and moisture. No grounding is necessary. Completely insulated. Union Insulating Co., 27 Park Place, New York, N. Y.

When writing mention WHOLESALER'S SALESMAN

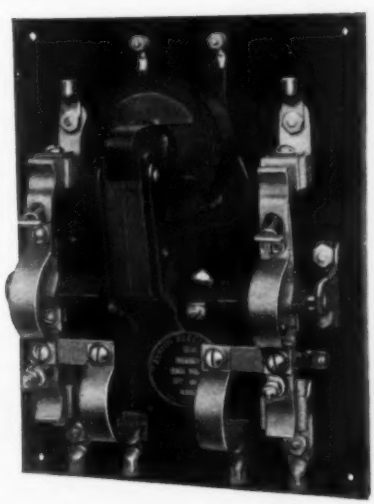
FLUORESCENT FIXTURE



Fluorescent fixture, Model No. 2075, consists of steel wireway channel with removable end caps, approved ballast, two end-pieces which hold sockets, starters and reflector. Non-metallic reflectors may be installed or removed easily. Unit may be used for both individual and continuous row lighting, for surface or suspension mounting. Available for standard operating voltage of 110-125 volts, 60 cycle a.c. Mitchell Manufacturing Co., Chicago,, Ill.

When writing mention WHOLESALER'S SALESMAN

SWITCH



Automatic transfer switch, for use in hospitals, theatres, public buildings, etc., is designed to eliminate interruption and lag in the transfer of the load from normal to emergency service. All contacts are carried on one shaft and operate in the same direction. Design is such that at all times contacts are either in normal

It takes TOOLS to win the war

Don't abuse them!

KLEIN TOOLS

Since 1857

ONE of the indications of a good workman is the way he cares for tools. Today, with the Army and Navy demanding quality tools in unheard-of quantities, there are few that can be spared for civilian needs. It is doubly important then that we make every tool we use give its full measure of service.

Most tools do not wear out. They are broken, damaged or lost long before they serve their full life. Conserving tools will add months, even years to their usefulness.

As a contribution to this tool-conservation program, we have prepared a booklet packed with suggestions on the care and safe use of tools. A copy of this booklet will be sent to anyone interested.

Handle tools carefully—treat them well. Quality tools are built to stand hard use—not abuse. Remember that a broken tool is a "break" for Hitler.

DISTRIBUTED THROUGH JOBBERS

Foreign Distributors:

International Standard Electric Corp., New York

Write for this free booklet on the care and safe use of tools.

Mathias Klein & Sons
3200 Belmont Avenue, Chicago, Illinois
Gentlemen: Please send me without charge a copy of the booklet *"Long Life to Tools."*

Name.....

Address.....

City.....*State*.....

Mathias KLEIN & Sons
Established 1857 — Chicago, Ill. U.S.A.
3200 BELMONT AVENUE, CHICAGO

MANUFACTURERS OF LINEMEN'S AND ELECTRICIAN'S TOOLS AND EQUIPMENT

or emergency position. Unit is furnished in 1, 2, 3 and 4 pole types and 18 capacities from 30 to 600 amperes. Switch is made to operate from a.c. to a.c., a.c. to d.c., or in any combination. Zenith Electric Co., 152 Walton St., Chicago, Ill.

When writing mention WHOLESALER'S SALESMAN

PORTABLE FLOODLIGHTS

Series 1630 portable floodlights for lighting airports, emergency fields, hangars, shipyards, railroad yards, factory grounds, etc., may be mounted on floor or directly on truck or other vehicle. Models supplied with casters are particularly useful in assembly and repair shops. Units employ 300-500 watt lamps, are adjustable to any angle vertical or horizontal, have a 12-inch chromium plated reflector. Steber Manufacturing Co., Chicago, Ill.

When writing mention WHOLESALER'S SALESMAN

TIMER

"Tamden Timer," a control unit with two individual and variable plug-in type timing elements makes continuous, as well as single cycle operation possible. Control cabinet with load relay contacts rated at 110 volts, 10 amperes a.c. measures 8½ x 8½ x 5 inches; timing elements with graduated dial and pointer knobs measure 5 x 5 x 3 inches. Six standard models are available offering settings of from ¼ second to 2 hours, 45 minutes. Industrial Timer Corp., 113 Edison Place, Newark, N. J.

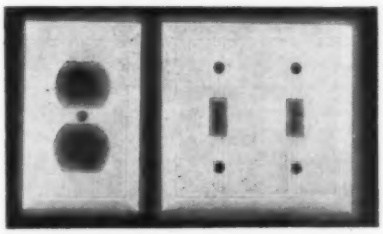
When writing mention WHOLESALER'S SALESMAN

FLUORESCENT UNIT

Explosion-proof fluorescent unit with non-metallic reflector is furnished with two 48 in. T-12 (40 watt) lamps. The construction is designed to eliminate the need for sealing fittings and accessories, terminal block is provided to make line connections. Easy accessibility to lamps, starters and ballast makes maintenance a simple operation. Appleton Electric Co., Chicago, Ill.

When writing mention WHOLESALER'S SALESMAN

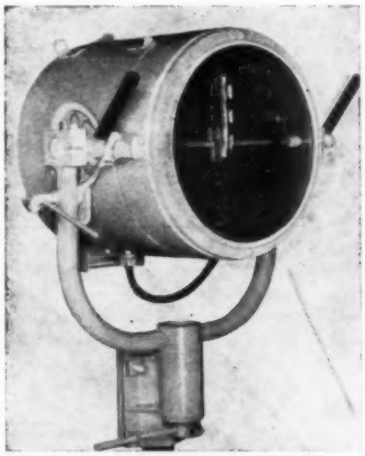
SWITCH PLATES



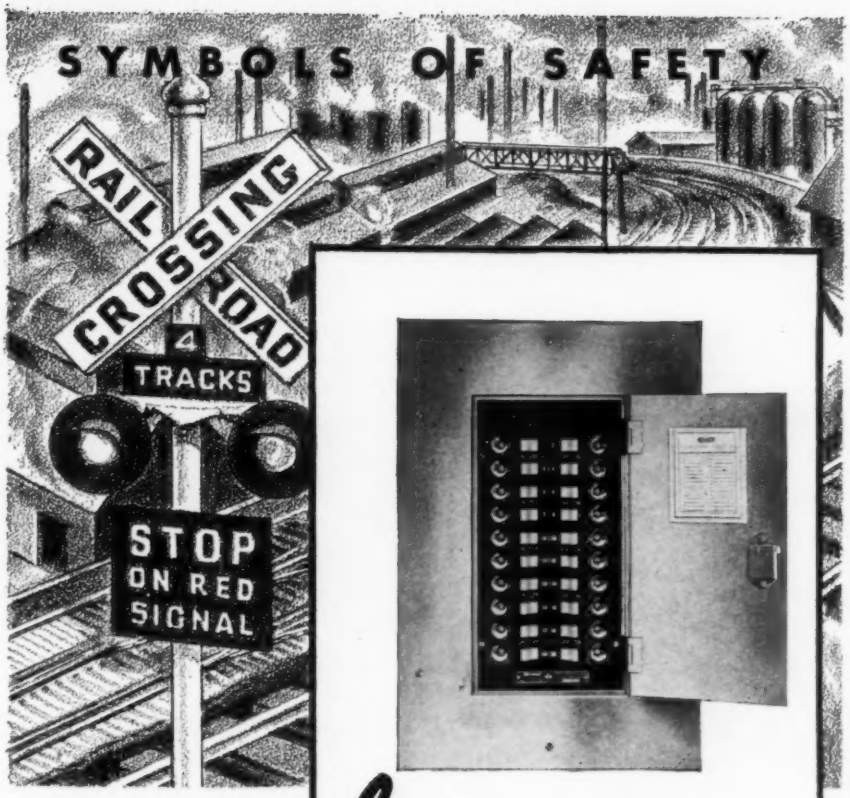
Luminous switch plates that glow in the dark are available in single gang styles (toggle; duplex receptacle, push button) and double gang styles (double toggle, combination toggle and duplex receptacle). They are molded of a luminous plastic material. It is claimed that the longer they are exposed to light and the brighter the light, the longer they will glow effectively. Gits Molding Corp., 4600 Huron St., Chicago, Ill.

When writing mention WHOLESALER'S SALESMAN

SEARCHLIGHT



All-welded marine signalling searchlight, made of bonderized steel, is intended for use on cargo vessels and transport



Federal PANELBOARD SAFETY FACTORS

INCREASE WAR PRODUCTION

Controlled, continuous lighting is essential for increased war production. That's why Federal panelboards are built with special safety features to insure perfect control and protection of lighting and small power circuits.

The rugged construction of Federal's low cost NTPR panelboards, for example, assures permanent alignment of working parts to reduce the danger of short circuiting. But there are many other safety features, such as—switch ahead of every fuse, floating contacts, large wiring gutters. This is true of *all* Federal Panelboards. Follow the leaders—for extra service and safety switch to Federal!

For Complete Panelboard Data

write for catalog 42. Contains all the essential facts on Federal NTPR and Mastertype panelboards.

FEDERAL ELECTRIC PRODUCTS COMPANY
52 PARIS STREET NEWARK, N. J.

PANELBOARDS • SWITCHBOARDS • SAFETY SWITCHES • CIRCUIT BREAKERS

RE-LIGHTING

the new manpower / production *requirement*

OPERATION STUDY SHEET

Working Conditions *Poor light, caused by improperly located lamps. Heavy shadows on work area confuse and slow up worker... considerable spoilage--accident hazard.*

Machine No. *349*

Capacity

Size

Department

Vital to reduce rejects, increase production

Operation study sheets all too often record "poor light" as a major cause of poor quality production—of too many units that cannot pass inspection. This condition is particularly noticeable on night-shift work because—

Most plants operating today were designed and built for peacetime, *daylight* working schedules. Wartime production demands night work; and *lighting based on daylight conditions is inadequate to serve the needs of night workers.*

The answer to this problem is *re-lighting.* You can quickly, easily, and with little expense increase the efficiency of your present lighting equipment by re-locating lamps to eliminate glare and shadow, increasing lamp wattages where necessary, or installing additional equipment to insure uniform lighting levels throughout your plant. A Silv-A-King lighting engineer can tell you exactly what is necessary.

Silv-A-King has specialized in industrial lighting for 22 years. Silv-A-King quality equipment (fluorescent or incandescent) plus a Silv-A-King "engineered layout" makes an unbeatable combination.

BRIGHT LIGHT REFLECTOR COMPANY, INC.
1031 Metropolitan Avenue, Brooklyn, N. Y.

UL SILV-A-KING RLM

Send for your copy of our 16-page book: "Light Is An Essential Production Tool"

SILV-A-KING
MAKES *Light* WORK FOR YOU

BROILKING AFTER THE WAR, MORE THAN EVER *America's Finest Electric Table Broiler*
INTERNATIONAL APPLIANCE CORPORATION
1027 Metropolitan Avenue, Brooklyn, N. Y.

ships. Fixed type front glass. Access for reclamping of the 1000-watt lamp gained through rear-opening door. Reflector is a standard silvered-glass searchlight type. Supporting trunnion arms are welded to other parts of mounting assembly, form one-piece construction. General Electric Co., Schenectady, N. Y.

When writing mention WHOLESALER'S SALESMAN

FLUORESCENT REFLECTORS———

Non-metallic fluorescent reflectors, made of a specially developed, lightweight, sturdy composition that is said to resist heat, moisture and corrosion. Made for either chain or rigid suspension. Reflecting surface is finished with high-gloss, chip-proof, baked white enamel. Available in two models—a two or three-lamp, 40-watt unit or a two-lamp, 100-watt unit. Bright Light Reflector Co., Inc., Brooklyn, N. Y.

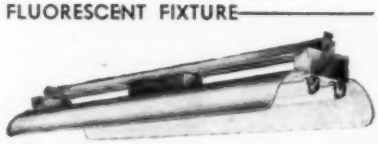
When writing mention WHOLESALER'S SALESMAN

TELEPHONE AND RADIO JACKS——

Line of telephone and radio jacks, suitable for use in radio sets and switchboards, have been approved by the Army Signal Corps. Illustrated is the Signal Corps JK-24, Woodwin No. 224. C. D. Wood Electric Co., 826 Broadway, New York, N. Y.

When writing mention WHOLESALER'S SALESMAN

FLUORESCENT FIXTURE———



Series 40-A fluorescent fixture, available for 2-40, 3-40, 4-40 and 2-100 watt fluorescent lamps. May be surface, chain or pipe mounted individually or in continuous runs. Non-metallic louvres are supplied where shielding is desired. The wire way is of rigid metal construction and may be completely exposed for easy installation or maintenance. Ballast is inverted and exposed for longer life and cooler operation. Lighting Products, Inc., Highland Park, Ill.

When writing mention WHOLESALER'S SALESMAN

News

(Continued from p. 33)

misrepresenting his business by referring to himself as a wholesaler, broker or manufacturer, and makes it unlawful for the retailer to advertise, use catalogs or display price tags that show prices fictitiously in excess of actual prices at which such merchandise is sold regularly at retail.

As described by the Official Bulletin of the Minnesota Electrical Council, Inc., the bill ". . . will not harm any honest merchant in any way. It will afford immediate relief in many cases, and will be especially important in the post-war recovery period when it will mean that electrical appliances, etc., will be sold through retail channels, giving the general public a chance to buy, instead of having the first supplies gobbled up by industrial buyers, etc., at wholesale for personal use."

***GRAND TROPHY** of the Massachusetts Safety Council is presented by Governnor Saltonstall to Robert E. Barrett, right, manager of the Salem, Mass., plant of Sylvania Electric Products Company's Incandescent Lamp Division. Employees of this plant have worked for two and one-half years without a lost-time accident. This represents 3,332,000 man-hours of safe working.*

Navy Needs Engineers

Men trained in electrical engineering are needed by the Navy for commissioning as officers to fill posts in connection with ultra-high frequency electronic equipment, the Office of Naval Officer Procurement announced recently.

Men who hold degrees in electrical engineering, or majored in physics or mathematics, and have practiced in the engineer field since graduation, upon acceptance will be commissioned and sent to either Harvard or Bowdoin College for a three-months course and then to the Massachusetts Institute of Technology for three months of laboratory work.

Qualified engineers are urged to apply for a commission at the nearest Office of Naval Officer Procurement.

Porcelain Products Names New Agents

Several new representatives in the Detroit and Philadelphia territories have been named by Porcelain Products, Inc., Findlay, Ohio.

Turrell & Benfield, Inc., Architects Building, Detroit, were appointed as representatives for the lower penninsula of Michigan. This territory will be covered by H. R. Turrell, J. D. Benfield, L. H. Beck, and R. J. Baker.

George I. Wright was appointed for the states of eastern Pennsylvania, Delaware, Maryland, District of Columbia and Southern New Jersey. He will be assisted by Lewis Conover of his staff.

Wiring Materials Representatives Named

Several new wiring materials field representatives have been named by GE to replace men joining the armed forces, according to an announcement from J. H. Crawford, manager of the construction materials division of General Electric Company's Apliance and Merchandise Department at Bridgeport, Conn.

The two changes in district No. 4, with headquarters in Cleveland are: S. D. Hopper, who is promoted from field representative to acting manager of the district office, replacing O. W. Cerny; and E. O. Callander, who had been with the GE Supply Corporation at Toledo, becomes field representative taking over the vacancy left by Mr. Hopper's advancement.

H. O. Dodson is the new GE field representative in district No. 5, with headquarters in Indianapolis, succeeding H. J. Kowal. Mr. Dodson was formerly with the GE Supply Corporation in Chicago and Indianapolis.

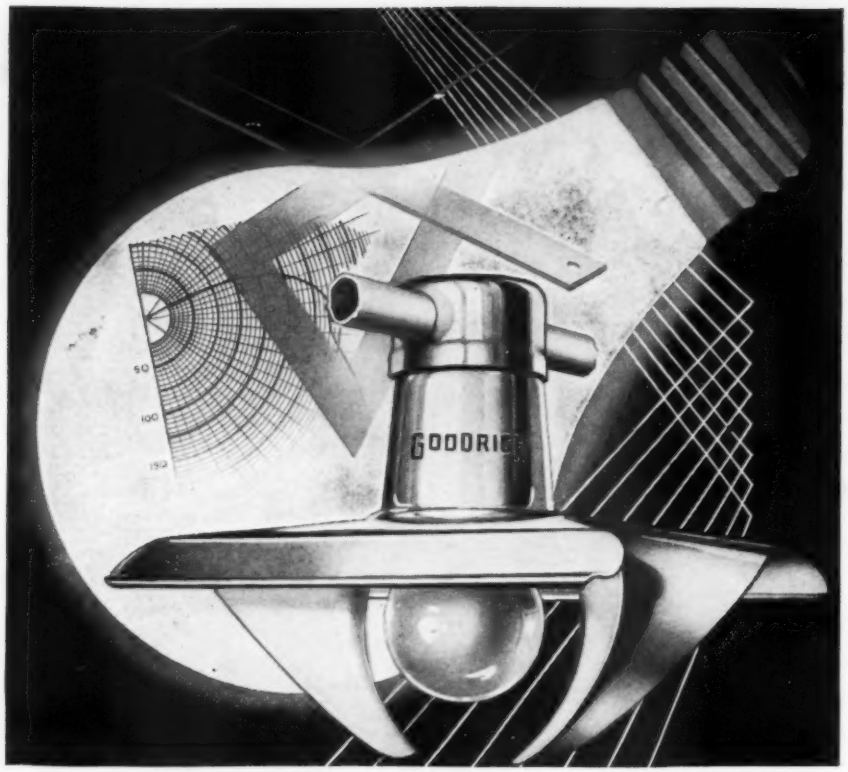
K. K. Crook is assigned to the Wisconsin territory in district No. 5, with headquarters in Chicago. H. C. Maccubbin replaces Arnold Jensen as representative in district No. 2, with headquarters in Philadelphia. R. O. Snyder becomes field representative in district No. 5, with headquarters in St. Louis, covering the territory formerly assigned to W. W. Bryan.

***ELECTED** to the presidency of Sylvania Electric Products, Inc., Walter E. Poor, above, succeeds B. G. Erskine who becomes chairman of the board. Mr. Poor was formerly executive vice-president of the company.*

Promotions At National Electric

Graham Holabird, has been appointed district manager at San Francisco for National Electric Products Corporation, replacing H. J. Newton who has been transferred to Pittsburgh to serve as general sales manager. Mr. Holabird for many years operated the electrical wholesaling firm of Holabird-Reynolds Electric Co. in San Francisco. He has been active in the Pacific Coast Electrical Association and the Los Angeles Electrical Development League.

***SOMEWHERE IN ENGLAND**, Charles G. Pyle, Jr., (right), son of NEWA's managing director and Mrs. C. G. Pyle, is seen training at Army's Officers Candidate School. Since this photo was released, to be exact, on April 14, 1943, "somewhere in England" young Mr. Pyle was commissioned as a 2nd Lieutenant.*



WE "BENT" LIGHT IN *Eight* DIRECTIONS
to illuminate shelves and bins

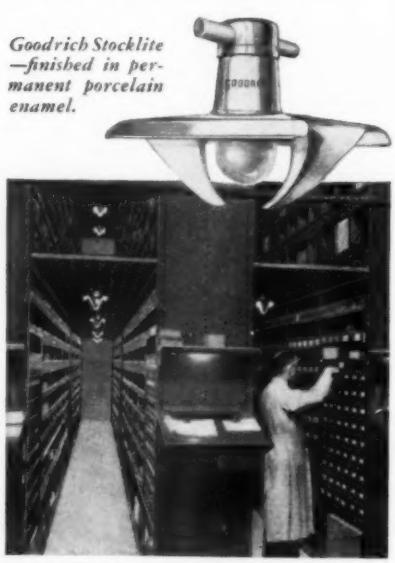
Stock bins and tool cribs were an "impossible" problem for illuminating engineers until Goodrich developed the Stocklite. This unique fixture now answers all three basic requirements by:

1. *Uniformly illuminating shelves from top to bottom row.*
2. *Making light reach into bin interiors.*
3. *Eliminating glare in the aisles.*

Nowhere else will you find such ingenious design — where many reflecting surfaces work together to build up light intensities where they are needed—using *all* the light without waste.

Today, the Stocklite is aiding America through faster, more accurate handling of stocks in hundreds of war plants, warehouses, and Government Departments. Ask for Bulletin 91.

Goodrich Stocklite —finished in permanent porcelain enamel.



RLM

Protecting vital plants with floodlighting — saving man-hours in production —Goodrich industrial fixtures are serving America's war effort everywhere.

LIGHTING FOR INDUSTRY

GOODRICH ELECTRIC COMPANY

OFFICES IN ALL PRINCIPAL CITIES

GENERAL OFFICES AND FACTORY: 4610 BELLE PLAINE AVENUE, CHICAGO, ILL.

SOLD ONLY THROUGH ELECTRICAL WHOLESALERS

Green Light to 32 REA Projects

Construction work on 32 Rural Electrification Administration projects, which was stopped last July 21st by the War Production Board, has been reinstated. The REA will be allowed to finish the work as a contribution to the food production program. The decision was made by WPB Chairman Nelson, on the basis of reports made to him by the Office of War Utilities and by the Department of Agriculture.

The projects are those which were in the "40 percent or more completed" category at the time of Pearl Harbor.

The completion of the projects will provide electric service to 6,700 farms, Mr. Nelson announced at the time the ban was lifted. Most of the material required to complete the jobs, now an average of 71 percent finished, can be obtained from excess inventories, he said, and "from a practical standpoint, no other use exists for these frozen stocks compared to the benefits to be obtained from completing the electrification of these farms."

***GOLF COURSE** for employees at Ilg Electric Ventilating Company, Chicago, has now been plowed up to serve as "Victory Gardens" sites for the same employees, each of whom will get a 20 by 20 foot plot. The company will also operate a garden to supply vegetables for its own lunchroom.*

Adds Electronics Men

To help industry with electronic application problems, the General Electric Company has appointed eighteen industrial electronic specialists who will be located in GE offices throughout the country. These specialists will be responsible for all industrial electronic applications in their territories.

HONORED for his engineering imagination, Charles H. Hodgkins, left, receives the Westinghouse Order of Merit from H. E. Seim, vice-president and general manager of Bryant Electric Company.

Canadian Wholesaler Aids Navy Exhibit

Through the donation of part of the space in its building, the J. Marcus Company, St. John, N. B. wholesaler, assisted in the display of Royal Canadian Navy guns, pictures, uniforms, ammunition, equipment, ship models, captured souvenirs of this and the past war. Officers and enlisted men of the Navy were on duty as guides each day during the week.

Triangle Makes Staff Changes

Triangle Conduit and Cable Co., New Brunswick, N. J., has announced through T. H. Bibber, the following changes in its sales organization: Mr. John Cushman, 340 Royal Palm Way, Palm Beach, Fla., district representative for the state of Florida (east of Pensacola); Mr. John Naylor, 621 Julia St., New Orleans, La., district representative for the states of Louisiana, Mississippi, and the cities of Mobile, Ala., and Pensacola, Fla.; the Triangle Pacific Company, Mr. C. H. Kaufman, 340 Azusa St., Los Angeles, Calif., district manager for the states of California (south of but not including Bakersfield), Arizona, Nevada (Las Vegas only); the Triangle Pacific Company, Mr. Rex Larsen, district manager, 1045 Bryant St., San Francisco, Calif., the states of California (north of and including Bakersfield), Nevada except Las Vegas), and Utah; the Triangle Pacific Company, Mr. Robert Sloane, district manager, 95 Connecticut St., Seattle, Wash., the states of Washington, Oregon, Idaho, and part of Montana.

Latrobe PRODUCTS

★ FLOOR BOXES ★ WIRING SPECIALTIES ★

HIGH QUALITY

EASILY INSTALLED

Save Installation Time— Get Better Results

Latrobe products are "naturals" for wartime jobs. They may be easily and quickly installed and may be depended upon for long trouble-free service in all industrial, commercial and residential work.

No. 100 Box with No. 206 Nozzle

Latrobe non-adjustable watertight floor boxes represent the last word in design, fewest number of parts, least amount of time to install.

"BULL DOG" Insulator Supports

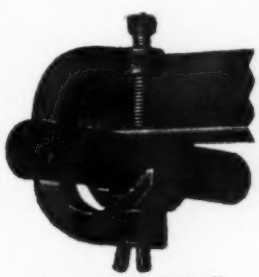
For fastening porcelain or glass insulators to exposed steel framework. Quickly attached, no holes to be bored. Four sizes.

No. 140 Floor Box

Latrobe Watertight Floor Boxes for quick installation in concrete and wood finished concrete floors. Neat design. Few parts.

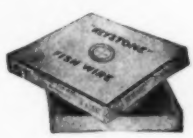
No. 284 Nozzle

This "Latrobe" Duplex Receptacle Nozzle is very neat and compact. Furnished with ½" or ¾" brass pipe extension.



No. 470 "Bull Dog" Pipe or Conduit Hanger

For hanging ½", ¾" and 1" pipe or conduit to steel beam ⅝" thick. Also ground clamp. Will accommodate copper wire Nos. 8 to 4.



Keystone Fish Wire

Made of finest grade flat steel wire properly tempered. Ten sizes. Packed 100, 150 and 200 foot coils. Other lengths if required.

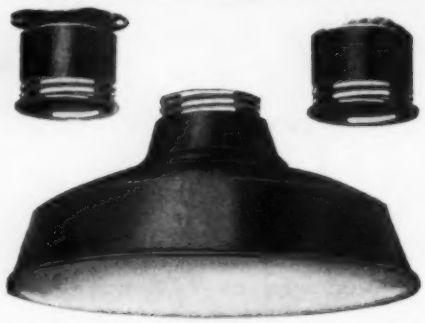
FOR BEST RESULTS
STOCK LATROBE PRODUCTS
SELL LATROBE PRODUCTS

DURABLE

ECONOMICAL

FULLMAN MANUFACTURING CO. QUALITY AT LATROBE SUPREMACY LATROBE, PA.

FULLMAN MANUFACTURING CO.
LATROBE . . . PENNSYLVANIA



No. 1184-M
RLM THREADED
DOME REFLECTOR

ADJUSTABLE PORCELAIN
ENAMELED FLOODLIGHT

QUAD

LIGHTING UNITS

QUADRANGLE
RLM

★ The immensity — not to speak of the urgency—of war production, demands lighting installations that have been proved. QUAD Units are the selection of Contractors to aid in this important work.

★ The QUAD line of Industrial Lighting Fixtures—RLM and other porcelain enameled units—fills all high intensity requirements. The need for so many additional installations necessitated by the war program means that QUAD is the line to take care of any lighting need.

QUAD . . . for today and for tomorrow

●

QUADRANGLE MFG. COMPANY

Mfgrs. of Incandescent and Fluorescent Lighting Equipment

32 SO. PEORIA ST. CHICAGO, ILL.

Morse to Head Sales at F-M

Robert H. Morse has been named general sales manager of Fairbanks, Morse & Co. The appointment climaxes a career with the company that began in 1916. Mr. Morse spent ten years in the manufacturing division, and followed it with sales work as manager successively of the Cincinnati, Dallas, and Boston branches. More recently he was assistant sales manager.

Wholesalers' Group Has 60th Birthday

LOS ANGELES—This year marks the 60th anniversary of the Los Angeles Wholesalers Board of Trade which was founded back in 1883 when Los Angeles was a small city with a few thousand population. It was first known as the Board of Trade, with all of the old timers as members. In 1905 it combined with the Wholesalers Board of Trade into the present organization.

During this 60-year period, the Board has progressed until now it is the second largest creditor owned and controlled adjustment bureau in the United States. In the past 60 years it has paid out more than $35,000,000 in dividends to creditors, saved creditors more than $4,500,000, and recovered concealed and fraudulently conveyed assets in the approximate amount of $200,000.

VICE-PRESIDENT of Arrow-Hart & Hegeman Electric Company, Hartford, Conn., is the new title for Haynes L. Everest. With A-H&H and its predecessor since 1907, he has been sales manager of the present company since it was formed in 1928, and has wide experience and acquaintance with wholesalers.

NEW MANAGER of the Product Service Division of GE's Appliance and Merchandise Department, is L. H. Taylor, who has been assigned to a special government contract for GE since the outbreak of the war. Product Service has just been made a division.

Specialty Distributor Offers New Lines

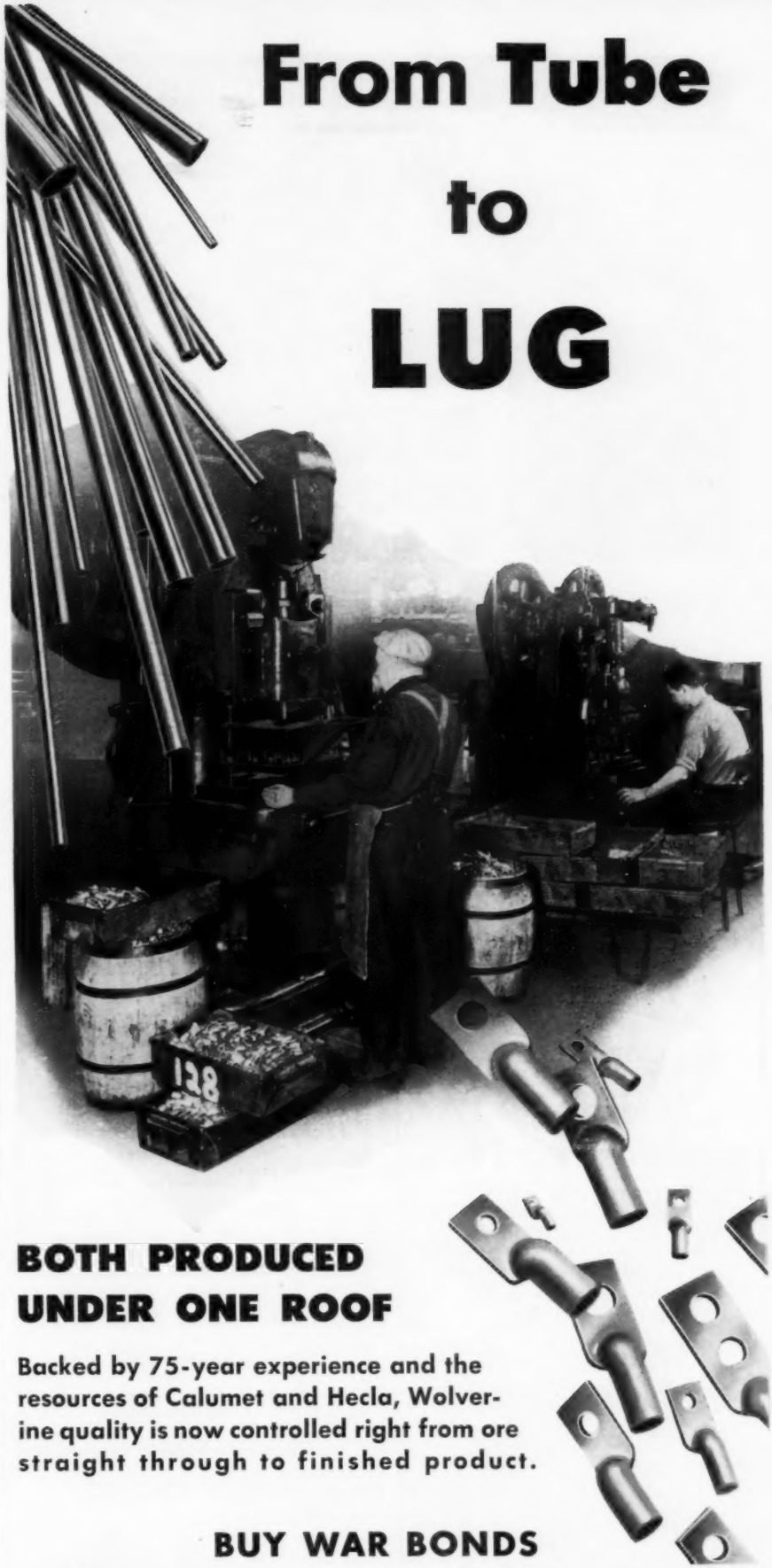
A line of glassware, china and giftware which its president believes is one of the most complete in the country, has been added by the Anchor Distributing Company of Pittsburgh, in an effort to help its dealers stay in business for the duration. A three-day "open house" in the company's newly-remodeled showroom was held in April to announce the new lines.

On display, besides the glassware, china and giftware, was a complete line of toys, games, dolls and framed pictures. In addition there were houseware items, cooking utensils (glass), insulation, ice refrigerators, victory model gas ranges, coal heaters and fuel saving devices.

Mr. Goldstein reports that he has traveled thousands of miles during several months to find the types of merchandise which he believed would be suited as "duration" lines for his dealers. However, he believes that many of these new lines being taken on will become permanent products for both his concern and his dealers.

Littelfuse Appoints

Ash Wood, sales manager of the California plant of Littelfuse, Inc., and Gerald E. Spates, general manager of the Chicago plant, have been elected vice-presidents of the company.


From Tube
to
LUG
BOTH PRODUCED
UNDER ONE ROOF
Backed by 75-year experience and the resources of Calumet and Hecla, Wolverine quality is now controlled right from ore straight through to finished product.
BUY WAR BONDS
CALUMET AND HECLA CONSOLIDATED COPPER COMPANY
WOLVERINE TUBE DIVISION
Seamless Copper — Brass
1425 CENTRAL AVENUE
DETROIT, MICHIGAN

KEEPING THINGS "On the Beam"

BIG BEAM
PORTABLE ELECTRIC RECHARGEABLE
HAND LAMP

• BIG BEAMS HAVE GONE TO WAR . . . on Land, Sea, and Air . . . and they're helping to win it. BIG BEAMS are standardized by some of the largest Defense Plants, Public Utilities, Hospitals, Railroads, and other industries throughout the country. BIG BEAMS guard against sabotage around plants, protect against light failure, high line inspection and repair, and have many other important functions.

Diversified uses have made necessary many special designs which will greatly increase the utility of these fine lamps AFTER THE WAR!

• *Write Sales Department for descriptive literature.*

U. C. LITE MFG. CO. 11 E. HUBBARD ST. CHICAGO, ILLINOIS

NEWLY-ELECTED vice-president of Southern Tier Electrical Supply Co., and manager of its Elmira Branch, Kenneth F. Grover, has long background in the electrical business, including 18½ years with N. Y. State Electric and Gas Corp., and 5½ years in the Turbine Division of GE.

Upstate N.Y. Notes

A reporter for WHOLESALER'S SALESMAN during a news-gathering trip in New England bumped into Walter "Blackie" Daw, well-known manufacturer's agent. Along with some reminiscing about Hot Springs, the following news items from the New York State area were picked up.

Edward Tilley, 47-year old lamp salesman for the General Electric Company's Lamp Department in the Albany and Schenectady territory, died suddenly from a heart attack in Schenectady. He is survived by his bride of one week.

Ben Reifler, son of N. L. Reifler, president of Electra Supply Co., Poughkeepsie, has left the employ of that concern to serve as a 2nd Lieutenant in the Transportation Corps of the Army.

Walter Laver, for the past 23 years an outside salesman for the Langdon & Hughes Electric Co., Utica, covering the Mohawk Valley Territory, has gone into business as a manufacturers' agent.

Douglas Florance, son of Jos. Florance, owner of Florance Electric Supply Co., of Syracuse, Binghamton, and Hornell, has left the company for service in the army.

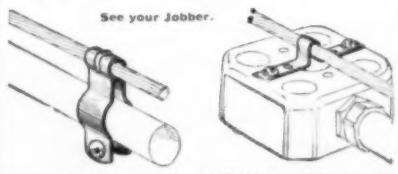
At least two men from this territory have managed to get their annual Florida tans this year. One is Jim Hughes, sales manager of Landon & Hughes Electric Co., Utica, and Karl "Barney" Thielscher, divisional manager for Graybar at Buffalo.

MINERALLAC

New Practical Unit to Cut Installation Time

● The "Messenger Hanger" and the "Messenger Strap" fill the need for an economical, practical, time-saving unit for use with the new messenger cable type of installation. Mechanically strong, durable, lightweight. They save considerable material and are easily and quickly installed. Our bulletin gives full and complete details—send for it.

See your Jobber.



"Messenger Hanger" for Conduit and Cable
Strong, made of Cadmium Plated Steel or Everdur. Top loop of hanger grips messenger cable to permit conduit to be put in place without failing off.

"Messenger Strap" for Outlet Boxes
Of Cadmium Plated Steel or Everdur. For messenger cable installaton to be used with Minerallac "Messenger Hanger." Fits all standard outlet boxes and ⅝" messenger cable.

MINERALLAC ELECTRIC COMPANY
New York City Office 50 CHURCH ST.
THEODORE B. DALLY
25 N. Peoria St. Chicago

YOU *can't sell your product if you don't tell your salesman—our readers—the whole story FIRST*

•

Tell them FIRST
Tell them OFTEN
Tell them ALL
FOR
BETTER SELLING

•

WHOLESALER'S SALESMAN
330 West 42nd Street, New York, N. Y.

Ireland Has New Post At McGraw Electric

Murray Ireland, who has been superintendent of the Toastmaster products division of McGraw Electric Co., Elgin, Ill., since it was started in 1927, has been elected a vice-president of the company and placed in charge of production of that division.

Mr. Ireland's experience with automatic toasters dates back to their earliest days. He has been granted a number of patents on automatic toasters and other electrical devices.

N. C. Hurley, Jr. Gets New Title

Neil C. Hurley, Jr., was elected executive vice-president of the Independent Pneumatic Tool Company of Chicago, at the recent annual meeting of the board of directors which followed the firm's annual stockholders' meeting. John A. McGuire was elected secretary, and E. R. Wyler was named vice-president with headquarters in New York City.

An appropriation of $600,000 out of earnings was made to act as a reserve for post-war contingencies and as a provision against post-war inventory losses.

Graybar Promotes Tatum in Richmond

John U. Tatum has been named to succeed the late H. J. McKnight as Southeastern District service manager of the Graybar Electric Co., Inc.,

with headquarters in the Graybar Building, Richmond, Va. Mr. Tatum is a native of Richmond, and has been with Graybar since 1926.

WAR PLANTS NEED THESE LIGHTING IMPROVEMENTS

Here Is Your Opportunity

● Every minute of production counts double today. Every accident and every bit of spoilage holds up the completion of parts, or equipment needed by our fighting forces.

Steber Lighting Equipment includes low cost, easily installed reflectors, coverlites, spotlights, floodlights, yardlights for general lighting, close-up supplementary lighting,—yard, stock pile and loading platform lighting.

Add to your general lighting,—cover exposed lamps, light corridors, stairways, sheds, stockrooms, repair rooms, entrances and exits. Use supplemental lighting for precision machine work and inspection. Flood outside areas with Steber Floodlights.

The Easy Detachable Socket Type Reflectors provide efficient, low cost, quickly installed lighting. Use standard 60 to 500 watt lamps, require no special wiring, nor accessories. Can be used anywhere. Ultranamel finish does not chip and has high reflectivity value.

Cat. No. 712 Shade Holder Type Shallow Dome Reflector. Fits standard 2¼" shade holder or other types of snap-in holders. Also made in standard dome and angle style. Finish is porcelain enamel of high reflectivity.

Steber Yardlight No. 1712-B. Comes completely wired with lag screws, ½" x 18" rigid pipe, cast shade holder and wall flange. Flange has ½" porcelain bushing to comply with R.E.A. regulations and protect wires. Eyelet provided at top of cast iron head to attach guy wires. Ideal for farms also.

Cat. No. 1630 Circulite—a mobile handy floodlight for industrial plants, airports, shipyards, shipways, repair departments and emergency work. Chromium-plated reflector. Diameter of base 22", overall height 23".

Steber Lighting Equipment is widely used throughout the country,—in manufacturing plants, warehouses, military posts, shipyards, — advertised in leading electrical and industrial journals. Every plant is a prospect,—Take out samples or your Steber Catalog Sheets for quick sales today.

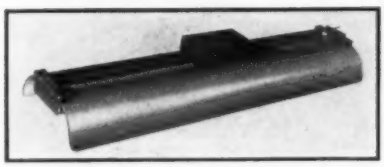
STEBER MANUFACTURING CO.
2451 N. Sacramento Ave., Chicago, Ill.

STEBER
LIGHTING EQUIPMENT

A "MUST" at the Buffalo War Conference

•

While in Buffalo with the National Electrical Wholesalers' Association we cordially invite you to visit the WILEY Fluorescent Fixture Plant



See Our New Instant Starting Fixture

Our new system of control does not require starting switches. The usual operating difficulties are eliminated; lamp life is longer than with starting switches and maintenance expense is the least possible.

•

See our latest, beautifully simple design in Industrial Fixtures, including Masonite reflectors and a minimum of steel, to comply with W.P.B. regulations. (See illustration).

•

See the operation of our Infrared Oven which polymerizes the plastic finish on the reflectors and wiring channels.

•

You will be interested in our Portable Bench Fixture, operating with one 20-watt fluorescent lamp. With it, the workmen can concentrate strong light on the workbench from a thousand angles.

•

Phone RI-5010; we will be delighted to talk with you. If you can't visit us, ask for our catalog.

The Wiley factory is only 15 minutes by taxi from the Statler.

R. & W. WILEY, INC.

Member Fleur-O-Lier Manufacturers

Dept. WS-53

Dearborn at Bridge St.
Buffalo, N. Y.

P. P. & S. for Tacoma Salesmen

The Tacoma, Wash., branch of Graybar Electric Company used to have six men in the office and warehouse besides John Reine, the manager, and J. G. Gillespie, service supervisor. To date, they have had five leave for the service. The stenographer and mail clerk were formerly men, are now replaced by women. In the warehouse recently they had one full time man and one part time man, with both scheduled to leave for the service in a couple of weeks.

Advertisements for warehousemen do no good, and no other effort to get more employees is successful, either. So, it begins to look for Reine, Gillespie, and salesman Earl Hoff, that it will be a case of P.P.&S. (Pick, Pack and Ship your own orders).

Turn In Old Fluorescent Parts

Turn-in of fluorescent lighting ballasts and transformers when replacements are purchased has been advocated at a recent meeting of WPB's Lighting Fixture and Ballast Advisory Committee.

Manufacturers have reported that many ballasts and transformers returned were not actually defective and that others could be restored to service.

DOLLAR-A-YEAR man now — Vic Mucher, well-known as sales manager of Clarostat Manufacturing Company of Brooklyn, N. Y., has been appointed a consultant to the Radio and Radar Division of WPB.

Ever Break a Socket?

To Avoid Troubles

hundreds of heavy industrials and shipyards are using our

UICO NO. 63310

IMPACT RESISTANT BAKELITE SOCKET

This All Canvas Bakelite Socket is built and proven to last three to four times as long as an ordinary socket. Such long-life dependability is especially essential now as it eliminates frequent reordering with accompanying priority problems and slow deliveries.

• ***Write*** **for details today on No. 63310 Bakelite Socket.**

THE ORIGINAL MANUFACTURERS of BAKELITE SOCKETS

UNION INSULATING CO.

Factory: Parkersburg, W. Va.
Sales Office: 27 Park Place
New York City

"E" Award

For the second time, all three major works of the Western Electric Company have received the Army-Navy production award, symbolized by the "E" pennant.

Trumbull Appoints Two in New England

L. C. Watson has been appointed New England district manager for the Trumbull Electric Manufacturing Co., with headquarters at the Plainville, Conn., factory. He will continue as a special representative on motor control.

Mr. Watson has been with Trumbull since 1928, and previous to that was a field representative of the Pettingil-Andrews Co. of Boston, which later became the GE Supply Corporation.

R. M. Booth has been assigned to the Boston office as a representative for Trumbull in the New England territory. He will replace "Bill" Edwards, recently transferred to Kansas City as district manager.

Introduces Electronic D-C Motor Control

A new electronic adjustable-speed drive for d-c motors has been introduced by the Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa. An announcement of the new electronic drive claims that it will provide wider speed ranges, closer speed regulation and smoother automatic starting and reversing of direct-current electric motors operating from an a-c source. As such it will speed up and increase the usefulness of machine tools and other vital industrial machinery powered by these motors.

Of particular importance to wholesalers is that the Mot-O-Trol, as it has been named, will be sold as a package unit in several sizes to suit the various horsepower ranges of d-c motors. It is housed in a cabinet about the size of a small console radio set.

The Mot-O-Trol converts alternating current from the power line into the required direct current by means of two electronic tubes called thyratrons which allow current to pass in one direction only. Within these tubes are grids which are connected to the speed control dial in front of the operator. Turning this dial varies the voltage of the grid which in turn varies the amount of electric energy that flows through the tube to the motor.

HERE'S A WAY YOU CAN CONSERVE "CRITICAL" STEEL!

Briegel fittings are made with 25% *less* steel than any other fittings on the market. Approved specifically for use in concrete and interior jobs.

DISTRIBUTED BY

The M. B. Austin Co. Chicago, Ill.
Clayton Mark & Co. Evanston, Ill.
Clifton Conduit Co. Jersey City, N. J.
General Electric Co. Bridgeport, Conn.
The Steelduct Co. Youngstown, Ohio
Enameled Metals Pittsburgh, Pa.
National Enameling & Mfg. Co. Pittsburgh, Pa.
Triangle Conduit & Cable Co. New Brunswick, N. J.

BRIEGEL METHOD TOOL CO., Galva, Ill.

"ROYAL JIM" says:

PD-IX WILL GET YOU ROYAL FUSES P D Q

ROYAL wire also available, but only for war essentials.

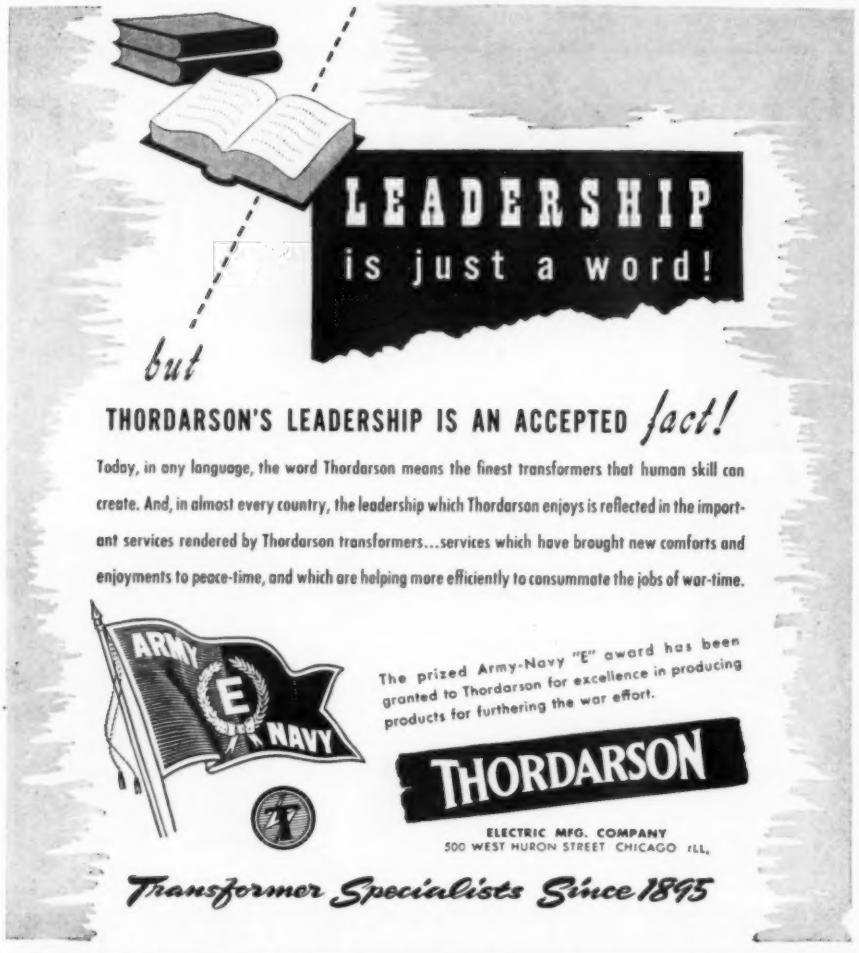
ROYAL Crystal Glass Top Fuses, and ROYAL Cartridge Fuses, are still available for civilian purposes despite the heavy war demands. WPB insured adequate supply for the American public thru use of PD-1X applications by wholesalers.

. . . so specify ROYAL — the PERFORMANCE *plus* fuses!

ROYAL has pioneered major improvements in fuse design and construction, and maintains important exclusive features today! ROYAL Fuses are the best to use . . . to buy . . . to sell!

ROYAL

R O Y A L
ELECTRIC COMPANY, INC.
95 GRAND AVENUE • PAWTUCKET, R. I.


LEADERSHIP
is just a word!
but
THORDARSON'S LEADERSHIP IS AN ACCEPTED fact!
Today, in any language, the word Thordarson means the finest transformers that human skill can create. And, in almost every country, the leadership which Thordarson enjoys is reflected in the important services rendered by Thordarson transformers...services which have brought new comforts and enjoyments to peace-time, and which are helping more efficiently to consummate the jobs of war-time.
ARMY E NAVY
The prized Army-Navy "E" award has been granted to Thordarson for excellence in producing products for furthering the war effort.
THORDARSON
ELECTRIC MFG. COMPANY
500 WEST HURON STREET CHICAGO ILL.
Transformer Specialists Since 1895

STOP - the Intruder
with
Revere INCANDESCENT
SEARCHLIGHTS
DESIGNED FOR ORDNANCE AND INDUSTRIAL PLANTS, BRIDGES, FORTS, ARSENALS, MARINE SERVICE AND OTHER PROTECTIVE LIGHTING APPLICATIONS.
PILOT HOUSE CONTROL AND HAND CONTROL
12 inch { 600 watt / 1,000 watt 18 inch { 1,500 watt / 2,000 watt
Beam of high candle power produced by precision ground polished silvered glass reflector.
A compact, sturdy unit that is dust, bug and weather-tight. Operates smoothly. The pilot house control type gives a full 360° horizontal rotation with vertical adjustment of 45° above or below horizontal. A thoroughbred in every particular.
Learn about the many other REVERE developments.
Write for Catalog Supplements and Discounts.
Count on REVERE to help you keep the supply lines flowing
REVERE ELECTRIC MFG. CO.
2935 NORTH PAULINA STREET · CHICAGO
Originators of the Hinged Floodlight Pole
INDOOR and OUTDOOR LIGHTING EQUIPMENT of EVERY DESCRIPTION

Praise This Salesman—Passing the Ammunition

R. F. Orchard, salesman for one of the large Pacific Coast electrical wholesalers, recently contacted a large army air base in one of the Western states. Aside from the materials entering into the construction of the project, there were required large quantities of emergency supplies. These were to be procured by the army officers assigned to the project.

Among other items, the officers knew that they were going to need a large number of ordinary electric fans. Hot weather would be along before

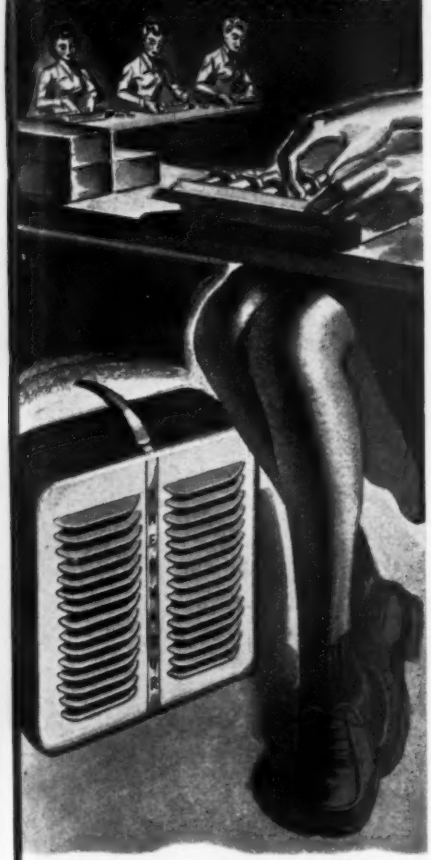
the project could be completed and air conditioning could not be installed in time. Besides, it was not known that the individual fans would not take the place of regular air conditioning and so make the latter unnecessary.

Over a hundred fans were needed and the job of procurement turned over to Orchard. In order to procure the right number, he furnished some out of stock and then scoured the whole Pacific Coast for the remainder, concentrating on manufacturers' agents and manufacturers' branch offices. Practically all this contact work was done by telegraph. In the end he got the necessary number, and out of three other stocks besides his own.

Crean Leaves NEMA

R. B. Crean, controller and manager of the Statistical and Office Service Departments of the National Electrical Manufacturers Association for the past several years, severed his connection with that organization following the Spring Meeting. He was expected to become assistant to the controller of the Baldwin Locomotive Works on May 1st, with headquarters in Philadelphia.

Cold Corners AND WARM WORKERS



Heats in Winter Cools in Summer

Aggressive dealers are featuring Thermador Fan Type Portable Electric Heaters for war plants where they are widely used to bring comfort to workers. Clean, compact, and safe, Thermador Heaters are portable and can be placed in cold, damp parts of war plants to improve working conditions.

With a flip of a switch, these double-purpose units heat in winter—circulate cooling air in summer. Flameless, fumeless Thermador Heaters are only available on priority orders in portable or built-in types for use on 115-volt A.C. service, 1650 watts capacity, or 230-volt A.C. in capacities up to 5000 watts.

Thermador also manufactures built-in Electric Heaters, Electric Ranges, Electric Water Heaters, and Small Transformers.

Write today for Catalog

THERMADOR
ELECTRICAL MFG. COMPANY
5119 South Riverside Drive
Los Angeles, Calif.
"Seven Leagues Ahead"

Mandernach Appointed

H. J. Mandernach has been appointed sales manager of the replacement tube section of General Electric Company's radio, television and electronic department at Bridgeport, Conn. He will be responsible for replacement sales of all types of electronic tubes sold through distributors.

Association News

CHICAGO—Mrs. Nona S. Ogren of the U. S. Department of Agriculture addressed the Women's Division of the Chicago Electric Association at a recent dinner meeting on the subject of soil conservation. Her talk included sound motion pictures on "Farming in the New England States." She also discussed present day farming problems and how those problems affected people in the cities.

One of the outstanding meetings of the season was held recently when Miss Lanna Long, chairman of the War Activities Committee, put on a thrilling and patriotic review of women in war work. Short talks were followed by prominent women in the various war-time services.

KANSAS CITY—John P. Price of the British Consulate addressed the Electric Association of Kansas City at a recent meeting on the subject, "India and the Atlantic Charter," answering such questions as, "How Does Britain Apply the Atlantic Charter to India?" and "What About Ghandi?"

The Association is contemplating sponsoring an electrical industry scrap drive for critical materials, especially copper.

NEW ORLEANS—From the Electrical Association of New Orleans comes word that the NEMA Committee on League Financing has authorized the issuance of "Certificates of Approval" for the current year to eight groups, as follows:

Cincinnati Electrical Association, Electrical Association of Kansas City, (Mo.), Electric League of Western Pennsylvania (Pittsburgh), Electrical Association of New Orleans, Pacific Coast Electrical Association, Inc. (Los Angeles), Electrical Association of Detroit, Electrical League of Milwaukee, and Electrical League of Rhode Island.

PATERSON—A very important subject was discussed at a recent meeting of the Passaic County Electrical League, Paterson, N. J. when Thomas D. Nevins, supervising analyst of the Priorities Department, WPB, spoke on the priority situation and how it affects the electrical industry.

P&S

(time-tested) PORCELAIN Wiring DEVICES

Just as P&S PORCELAIN WIRING DEVICES installed years ago are still serving faithfully—so new installations of these devices will serve long after this war is won.

Ask for complete information.

PASS & SEYMOUR
INCORPORATED
SYRACUSE, N.Y.

TRICO PRODUCTS
for NATIONAL DEFENSE

Just as TRICO ELECTRICAL protective and LUBRICATING DEVICES installed years ago are still serving faithfully—so new installations in vital war plants are doing their part in speeding up production schedules . . . and they will continue to serve long after this war is won.

• • •

Remember, too, TRICO'S "Thru the Wholesaler" policy assures you a maximum volume of business—and PROFIT—year after year.

IT PAYS TO PUSH TRICO

TRICO FUSE MFG. CO., Milwaukee, Wis.
In Canada: IRVING SMITH LIMITED, Montreal

ILSCO
Electrical Connectors

Write Your Own Ticket

Ilsco
APPROVED
SINGLE HOLE
SOLDERING
LUGS

Because all lugs are drawn from large seamless copper tubes right in our own plant we can furnish

SOLDERING LUGS ANY SIZE, TYPE, SHAPE OR PURPOSE

ILSCO facilities help you solve your problems . . . ILSCO quality assures you of best results always . . . all ways.

MAIL THIS COUPON TODAY

Please rush us sample and 32-page illustrated catalog.

NAME .....

FIRM NAME .....

ADDRESS .....

ILSCO COPPER TUBE & PRODUCTS, Inc.
CINCINNATI, OHIO

Wesco Makes New Appointments

B. W. Clark, president of the Westinghouse Electric Supply Company, has announced the election of George E. Carpenter as treasurer and assistant-secretary of the company, and the appointment of John J. Kaske as assistant chief stores manager.

Mr. Carpenter, who has been general auditor for WESCO since April, 1941, succeeds W. M. Dick, who resigned after 40 years of service. For seven years, following his joining the company in 1923, Mr. Carpenter was

assistant auditor. He later served as traveling auditor, and as assistant secretary and district auditor in Chicago. He is a member of the Controllers Institute of America and the National Electrical Wholesalers Association.

Mr. Kaske was district stores manager in St. Louis for 15 years before his appointment as assistant chief

stores manager. Before that he was associated with the McGraw Electric Appliance Company, which was absorbed by Westinghouse in 1926.

MORE FACTS ON PRODUCTS

Control Equipment—New bulletin, containing eight pages, describes and illustrates automatic control equipment products manufactured by Zenith Electric Co., Chicago, Ill.

When writing mention WHOLESALER'S SALESMAN

Control Equipment—Bulletin No. 69, recently published by Frank Adam Electric Co., St. Louis, Mo., describes the company's panelboards and cabinets and contains illustrations, type and construction data, template for special knockouts, and essential information for correct ordering.

When writing mention WHOLESALER'S SALESMAN

Electrical Contacts—Catalog, 36 pages, explains the design, manufacture, and application of electrical contacts of silver, platinum, tungsten, and a variety of other metals and alloys, manufactured by Callite Tungsten Corp., Union City, New Jersey.

When writing mention WHOLESALER'S SALESMAN

Electrical Equipment—Ninety-six page booklet (B-3206) entitled "Wartime Conservation" is published by Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa., covers up-rating of motors, thermal temperature loading of transformers, industrial network systems, line equipment and materials; and gives tips on saving and salvaging materials as practiced in this company's various plants.

When writing mention WHOLESALER'S SALESMAN

Fluorescent Lighting Units—Catalog No. 43-V describes in detail and illustrates, the victory 40 and 100 models of the Silv-A-King line of fluorescent lighting units, manufactured by Bright Light Reflector Co., Brooklyn, N. Y.

When writing mention WHOLESALER'S SALESMAN

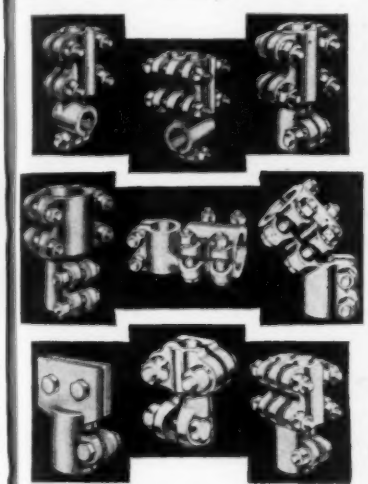
Incandescent Lamps—Catalog, explains various claimed advantages and describes the several types of Verd-A-Ray lamps as manufactured by the Save Electric Corp., Toledo, Ohio. Also includes illustrations, chart, and price list.

When writing mention WHOLESALER'S SALESMAN

"You select
EXACTLY
what you need—

— from the COMPLETE line"

Stud Connectors and Solderless Terminal Adapters for distribution and power transformers . . . for connecting to cable, pipe or bus bar . . . in line or at any angle. Connectors with reversible clamping caps take two different ranges of cable sizes. Furnished for any number of conductors. A few of Penn-Union's many types:



Also . . . the most complete line of Service Connectors, Cable Taps, Tees . . . Straight and Parallel Connectors . . . Bus Supports, Spacers . . . Grounding Clamps, Terminal Lugs, etc. etc.

Penn-Union conductor fittings are the first choice of leading utilities, industrials, electrical manufacturers and contractors—because they have found that *"Penn-Union" on a fitting is their best guarantee of Dependability.* Write for Catalog.

PENN-UNION ELECTRIC CORPORATION
ERIE, PA. *Sold by Leading Jobbers*

PENN-UNION
Conductor Fittings

Electrical Specialties—Minerallac Electric Co., Chicago, Illinois, has available a bulletin describing the company's "messenger hanger" for conduit and cable and, the "messenger strap" for outlet boxes.

When writing mention WHOLESALER'S SALESMAN

Lighting Equipment—Twelve page booklet by Fostoria Pressed Steel Corp., Fostoria, Ohio, tells the story of "balanced" lighting—what it is, how to achieve it and what it will do. Includes descriptions and illustrations localized and general lighting equipment. Flashes No. 343.

When writing mention WHOLESALER'S SALESMAN

Lighting Units—Catalogs No. 101 and 102 published by Reliance Devices Co., Inc., New York City, contains many illustrations, descriptive data, and application sketches of the "Swivelier" sockets, adaptations, and Work-Lite units.

When writing mention WHOLESALER'S SALESMAN

Sound System—In a special bulletin, No. 37, the Bell Sound Systems, Inc., Columbus, Ohio, describes and illustrates the various types of sound equipment available in connection with the company's voice paging system for use in industrial plants and large commercial organizations.

When writing mention WHOLESALER'S SALESMAN

Tools—A booklet entitled, "Long Life to Tools," published by Mathias Klein & Sons of Chicago as a contribution to tool conservation, is offered in pocket size, contains no advertising. Includes many sketches and valuable suggestions on how to make tools last longer and give better service. A copy will be sent without charge to anyone who can make use of it.

When writing mention WHOLESALER'S SALESMAN

War-Time Lighting—"How to Get More Light for Your Money," a new wartime booklet which provides housewifes with information on the correct use and care of lamp and lighting fixtures, is available for dealer distribution from the Westinghouse Lamp Div., Bloomfield, N. J.

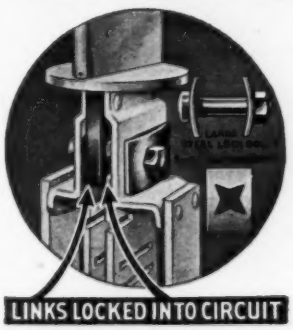
When writing mention WHOLESALER'S SALESMAN

Wiring Devices—Twenty-page catalog, No. 243, fully illustrated, contains detailed descriptions and price list of the different wiring devices manufactured by Lew Fittings Company of Chicago, Ill.

When writing mention WHOLESALER'S SALESMAN

A Cool Protector
—when mounted

WARE HI-LAG



LINKS LOCKED IN TO CIRCUIT

CONTACTS NON-HEATING
Keep Motors Humming

- End Over-Heating
- Stop needless fuse blowing
- Time-Lag 2 to 5 Times Normal Current
- Certified to Comply—Federal Specification W F 803-a-Type II

APPROVED BY UNDERWRITERS
Mfgr's Agents Territory Open

WARE BROTHERS
4420 W. Lake St. Chicago, Ill.

WARE
Renewable
HI-LAG FUSES

"FRIGID"
VENTILATING EQUIPMENT
Circulators, Exhaust Fans, Blowers, Attic and Industrial Fans, Spray Booth Fans, Shutters
FOR THE DURATION WE CAN ACCEPT PRIORITY ORDERS ONLY
Circulators and Devices Manufacturing Corp.
100 Prince St. New York, N. Y.

TORK

TURN ANYTHING ELECTRICAL ON & OFF REGULARLY
***The* TORK CLOCK CO., Inc.**
MOUNT VERNON, NEW YORK

NALCO

Infra-Red Ray
LAMPS
For Radiant Energy —Baking And Drying
Meet industry's demands for radiant energy-heating and drying by featuring Nalco Dritherm Carbon Filament Lamps. Available in Inside-Silvered finish (no reflectors required) or in Clear Glass style.
Write for prices and discounts
NORTH AMERICAN ELECTRIC LAMP COMPANY
1034 Tyler Street St. Louis, Missouri

ACF *"A Quality Line at Competitive Prices"*
A full line of quality conduit fittings and connectors. To assure your contractor and industrial customers of full satisfaction, sell them the A.C.F. line.
Illustrated is a ⅜" Non - Metallic Sheathed Cable Connector.

Write for descriptive bulletins and prices.
ATLANTIC CONDUIT FITTINGS CO.
589 Atlantic Avenue • Boston, Mass.

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Accurate Mfg. Co. 100
Adam Electric Co., Frank 26
Appleton Electric Co. 41
Arrow-Hart & Hegeman Elec. Co. 12
Artkraft Sign Co. 88
Atlantic Conduit Fittings Co. 140

B
Benjamin Elec. Mfg. Co. 60
Briegel Method Tool Co. 135
Bright Light Reflector Co. 126
Bryant Elec. Co. 102
Buffalo Forge Co. 94
Bull Dog Elec. Prod., Inc. Inside Front Cover
Bussmann Mfg. Co. ..... Back Cover

C
Champion Lamp Works 114
Circulators & Devices Mfg. Co. 140
Conduit Pipe Products 64
Crescent Ins. Wire & Cable Co. 18
Crouse-Hinds Company 20
Curtis Lighting, Inc. 14

D
Day Brite Lighting, Inc. 91

E
Edwards & Co. 3
Electric Neon Clock Co. 104
Electrical Buyers Reference 119
Electro Mfg. Co. 23, 24, 25
Emerson Elec. Mfg. Co. 92

F
Federal Elec. Prod. Co. 125
Fleur-O-Lier Mfrs. 93
Fullman Mfg. Co. 129

G
General Cable Corp. 4, 5
General Electric Co. (Bridgeport) 28, 29
General Electric Co. (Nela Park) 10, 11
Goodrich Elec. Co. 128

H
Hazard Ins. Wire Works Div. 7, 52
Hubbard Mfg. Co. 110

I
Ilg. Elec. Vent. Co. 40
Illinois Electric Porcelain Co. 106
Ilsco Copper Tube & Products, Inc. 138

J
Jefferson Elec. Co. 34

K
Ken-Rod Tube & Lamp Corp. 42
Klein & Sons, Math. 124

L
Leader Elec. Mfg. Co. 107
Lighting Products, Inc. 118

M
Martin-Gibson Corp. 74
Minerallac Electric Co. 132
Mitchell Mfg. Co. 103

N
Noma Electric Corp. 112
North American Lamp Co. 140

O
Okonite Company 7, 52

P
Pass & Seymour, Inc. 137
Penn Union Electric Corp. 139
Philadelphia Elec. Mfg. Co. 78
Pierce Laboratories, Inc. 99
Pittsburgh Reflector Co. 83
Plymouth Rubber Co., Inside Back Cover
Porcelain Products, Inc. 86

Q
Quadrangle Mfg. Co. 136

R
Remington Rand 117
Revere Elec. Mfg. Co. 136
RLM Standards Inst., Inc. 19
Robbins & Myers, Inc. 56
Royal Electric Co. 135

S
Schwarze Electric Co. 96
Seyler Mfg. Co. 76
Smith Iron Co., A. L. 105
Spang Chalfant, Inc. 115
Spero Electric Corp. 109
Square D Company 8
Steber Mfg. Corp. 133
Sylvania Elec. Prod., Inc. 32, 70

T
Thermador Elec. Mfg. Co. 137
Thomas & Betts Co. 39
Thordarson Elec. Mfg. Co. 136
Tork Clock Co. 140
Trico Fuse Mfg. Co. 138
Trumbull Elec. Mfg. Co. 122

U
U. C. Lite Mfg. Co. 132
Union Insulating Co. 134
United States Rubber Co. 30, 36, 37
U. S. Treasury Dept. 116

W
Wakefield Brass Co., F. W. 6
Ware Brothers 139
Westinghouse Lamp Co. 16, 17
Wiley, Inc. R & W 134
Wiremold Co. 27
Wolverine Tube Division 131